JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J407MS

VHS
PAL NTSC

SPECIFICATIONS

GENERAL

Power requirement	: AC 110 – 240 V∿, 50/60 Hz
Power consumption	: 19 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Dimensions (WxHxD)	: 435 x 104 x 336 mm
Weight	: 5,5 kg
Format	: VHS standard
Maximum recording time	: 240 min. with E-240 video cassette (PAL/MESECAM) : 160 min. with T-160 video cassette (NTSC)

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields : NTSC colour and EIA monochrome signals, 525 lines/60 fields
Recording system	: Rotary, slant azimuth two-head helical scan system
Signal-to-noise ratio	: 43 dB (Rohde & Schwarz noise meter)
Horizontal resolution	: 240 lines (PAL) 220 lines (NTSC)
Frequency range	: 70 Hz to 10,000 Hz
Input/Output	: RCA connectors (IN x 1, OUT x 1)

TUNER/TIMER

TV channel storage capacity	: 48 positions (+ AUX position "AU")
Channel coverage	: Band 1: CH 1 – 5 (China, Russia) CH E2 – E4 (Europe) CH 2 – 6 (U.S.A.) Band 3: CH 6 – 12 (China, Russia) CH E5 – E12 (Europe) CH 7 – 13 (U.S.A.) CATV Channels Band U: CH 13 – 57 (China, Russia) CH E21 – E69 (Europe) CH 21 – 69 (U.K.) CH 14 – 69 (U.S.A.)
Aerial output	: UHF channels E32 – E40 (adjustable)
Programme capacity	: 1-year/8-programme timer
Memory backup time	: Minimum 3 min.

ACCESSORIES

Provided accessories	: Aerial cable, Infrared remote control unit, "R03/UM-4" battery x 2, Conversion plug, AC power cord

Design and specifications subject to change without notice.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

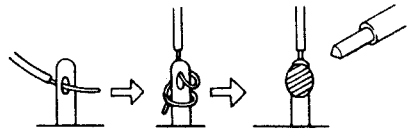


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

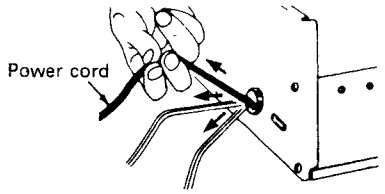


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

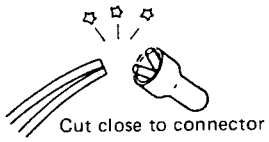


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

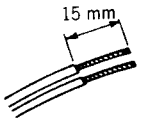


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

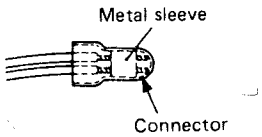


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

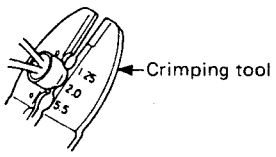


Fig. 6

(5) Check the four points noted in Fig. 7.

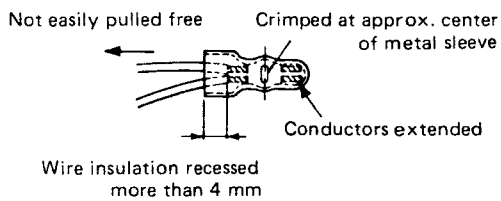

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

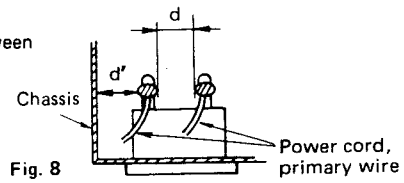


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

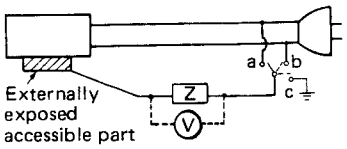


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

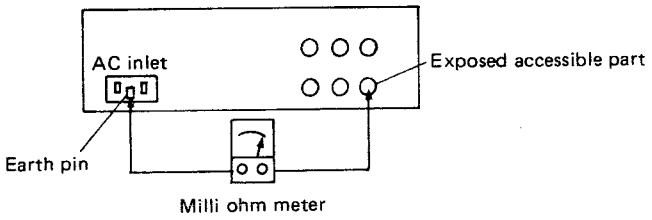


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	—	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

Safety Precautions

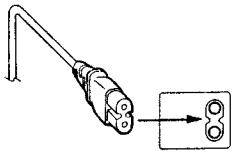
The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

CAUTION



- To avoid electric shock or damage to the unit, first firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.
- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.
- Use the conversion plug (provided) depending on the type of your AC wall outlet.

ATTENTION
1. This recorder can also receive SECAM colour television signals for recording and playback.
2. Recordings made of SECAM television signals produce monochrome pictures if played back on another video recorder of SECAM standard, or do not produce normal colour pictures if played back on another video recorder of PAL standard.
3. SECAM prerecorded cassettes or recordings made with a SECAM video recorder produce monochrome pictures when played back with this recorder.

IMPORTANT:
- It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.
- Please read the "Precautions" section of this instruction manual before installing or operating the recorder.

POWER SYSTEM
This set operates on voltage of AC110 – 240 V~, 50/60 Hz with automatic switching.

Video tapes recorded with this video recorder in the LP (Long Play) or EP (Extended Play) mode cannot be played back on a single-speed video recorder.

VHS PAL NTSC HQ

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.

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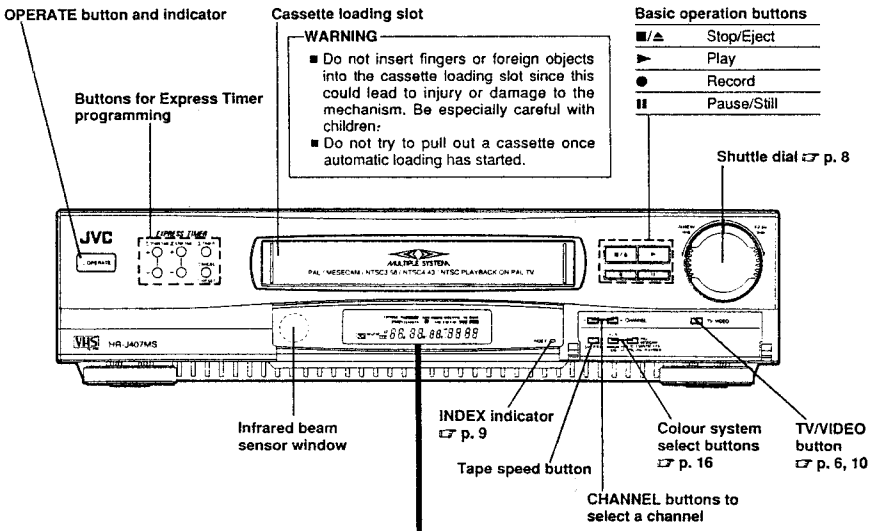
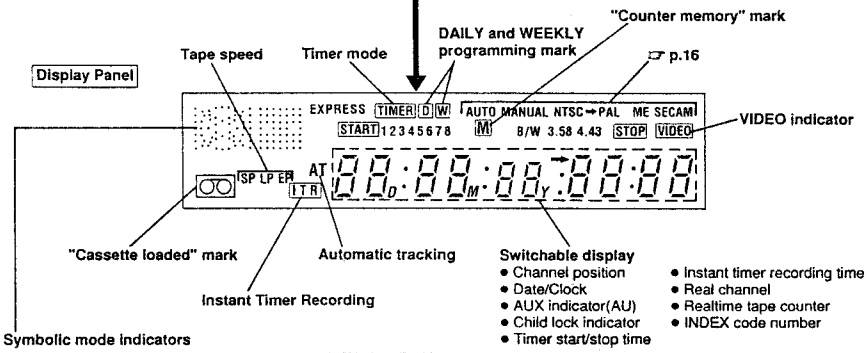
Controls And Indicators

Front Panel

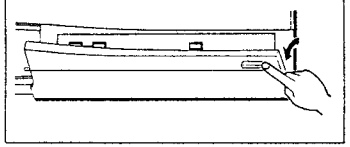

OPERATE button and indicator
Cassette loading slot
WARNING
■ Do not insert fingers or foreign objects into the cassette loading slot since this could lead to injury or damage to the mechanism. Be especially careful with children.
■ Do not try to pull out a cassette once automatic loading has started.
Basic operation buttons
■/▲ Stop/Eject
► Play
● Record
❚❚ Pause/Still
Buttons for Express Timer programming
Shuttle dial ☞ p. 8
JVC
Infrared beam sensor window
INDEX indicator ☞ p. 9
Tape speed button
Colour system select buttons ☞ p. 16
TV/VIDEO button ☞ p. 6, 10
CHANNEL buttons to select a channel



Symbolic mode indicators

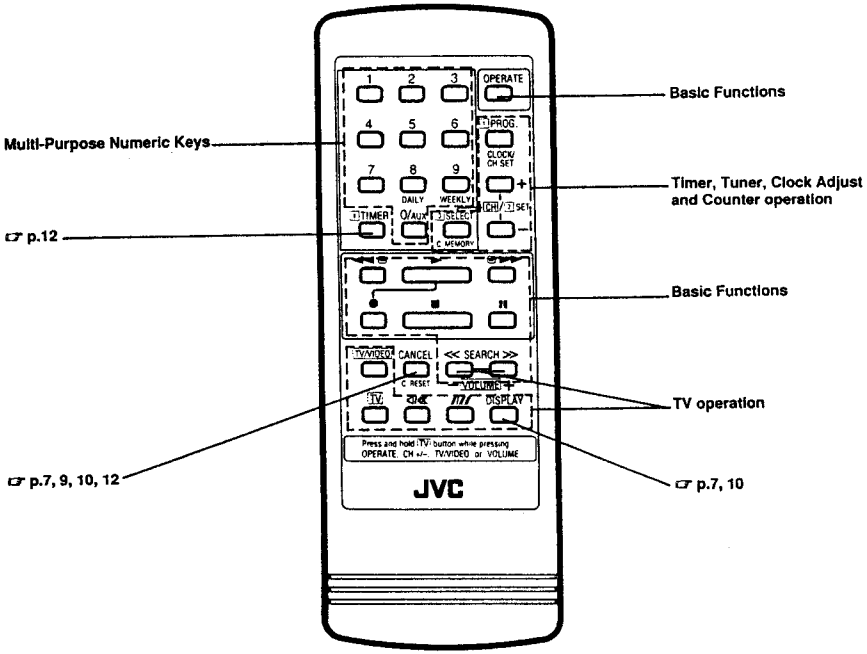
PLAY:	▷	REW VARIABLE SHUTTLE SEARCH:	◁
FF:	▷▷	STILL: FORWARD SLOW:	▷
REW:	◁◁	RECORD:	●
FF VARIABLE SHUTTLE SEARCH:	▷	RECORD PAUSE:	❚❚
REVERSE PLAY:	◁		

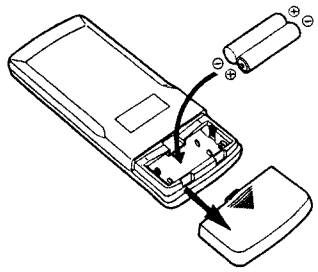
Open the lid to access these buttons.



Controls And Indicators (cont'd)

Wireless Remote Control





Installing Batteries

1. Open the battery compartment cover.
2. Insert 2 "R03/UM-4"-size batteries (provided) in the correct directions.
3. Replace the cover.

How To Use

The remote control can operate most of your video recorder's functions, as well as basic functions of designated JVC TV sets.

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

TV Operation

You can also use the recorder's remote control to operate a JVC television.

To operate your TV, press and hold down the TV button while you press OPERATE, or CH(annel) +/–, or TV/VIDEO, or VOLUME +/–, or DISPLAY (for the TV's on-screen display function), or ◀◀/▶▶ (to select either Main or Sub programmes), or ◁/✕ (to mute the TV's sound).

- TV channel cannot be changed using the numeric keys.

Connections

It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

A RECORDER-TO-TV CONNECTION

RF CONNECTION

For TV sets without AV input terminals:

1. Connect the TV aerial cable to the recorder.
2. Connect the recorder to the TV's aerial terminal.

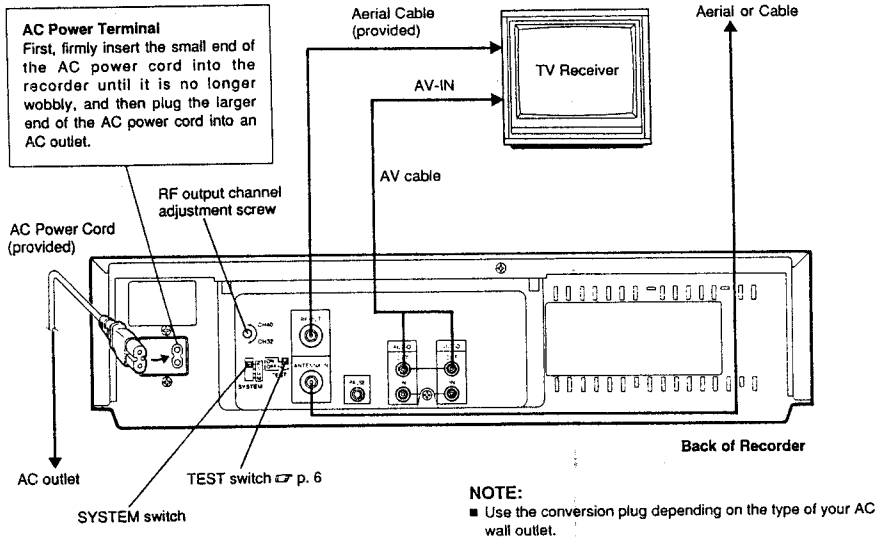
AV CONNECTION

For TV sets with AV input terminals:

1. Connect the aerial, recorder and TV as per "RF CONNECTION".
2. Connect the recorder to the TV's AV-IN terminals.

AC Power Terminal

First, firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.



NOTE:

- Use the conversion plug depending on the type of your AC wall outlet.

B SELECT TELEVISION SYSTEM

Set the SYSTEM switch to the appropriate position according to your TV system. (Refer to the chart on the right.)

NOTES:

- If no colours appear on the screen when using a multi-system television with its system select switch set to AUTO, change the switch position to correspond to the recorder's RF system select switch (K, I, G or M).
- For more information on multi-system compatibility, ☞ p.15.

Major countries	Colour TV broadcast system	Switch position
China, Mongolia	PAL D/K	K
Russia	SECAM D/K	
Hong Kong	PAL I	I
Indonesia, Singapore, Thailand, Malaysia	PAL B/G	G
Iran, Saudi Arabia, Egypt, Morocco	SECAM B/G	
U.S.A., Japan, S. Korea, Taiwan	NTSC M	M

Continued on next page.

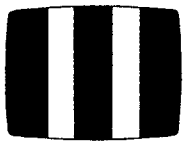
Connections (cont'd)

C ADJUST VIDEO CHANNEL

With an RF connection, the video recorder sends picture and sound signals through the connecting cable to your TV on UHF channel 36.

TEST SIGNAL

1. Turn on the recorder.
2. Set the TEST switch to ON.
3. Press TV/VIDEO to engage the VIDEO mode.
4. Set your TV to the video channel. Tune to the real channel 36, to bring the two vertical white bars on the screen most clearly.



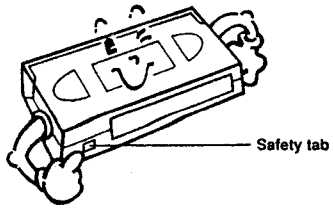
5. Your TV should be set to the channel designated for use with a video recoder or to a spare channel if there is not a specified channel.
6. Reset the TEST switch to OFF.

NOTE:
If some interference noise is seen on the screen because of broadcasts on neighbouring channels, adjust the RF output channel adjustment screw to change the video channel from UHF channel 36. This is possible for UHF channels 32 through 40. Consult your JVC dealer for making this adjustment.

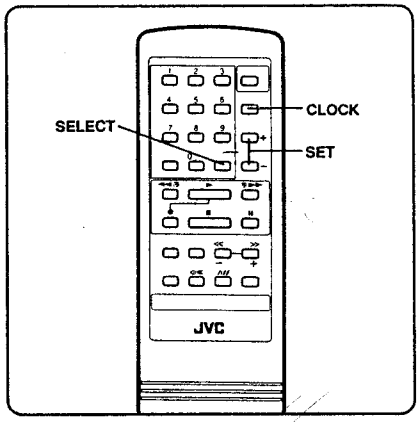
IMPORTANT:
To operate the recorder with your TV using an RF connection, it is always necessary to set your TV's channel to VIDEO CHANNEL. With an AV connection, set the TV to the VIDEO (or AV) mode.

Special Note On Video Cassettes

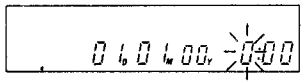
To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



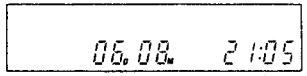
Setting The Clock



1. **Press CLOCK.**



2. **Press SET to set the hour, and then SELECT.**
3. **Repeat step 2 to set the minute, day , month and year.**
4. **Press CLOCK.**



TO MAKE CORRECTIONS

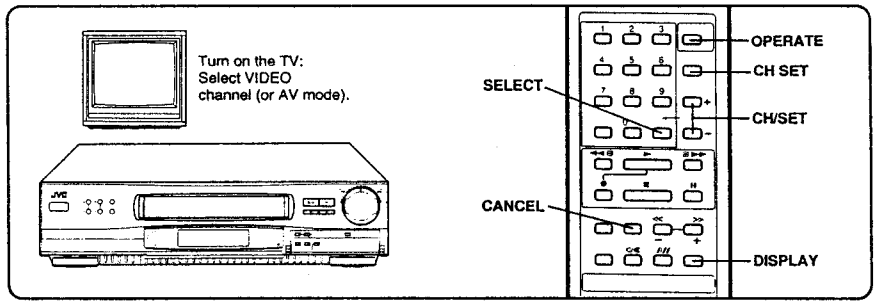
Advance with SELECT to the item you wish to change and input new data with SET.

POWER FAILURE INDICATOR

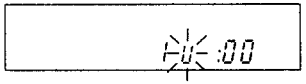
The clock resets to "0:00" and starts blinking when there has been a power failure. Reset the time to return the clock display to normal.

NOTE:
- If the day and month data is invalid (such as 31st April), the month digits are cleared automatically and the day digits will blink. Input again.

Setting The Tuner

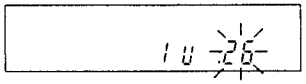


1. **Press OPERATE to turn on the recorder.**
2. **Press CH SET.**
3. **Press SELECT.**
   - The band indicator will blink.
4. **Press CH/SET to select "1", "3", or "U".**
   "1", "3" : VHF band "U" : UHF band



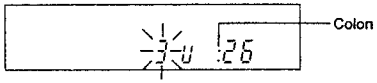
Tuning voltage giving a rough reference of where tuning is being performed in the corresponding band.

5. **Press SELECT.**
6. **Keep CH/SET + pressed for a few seconds until automatic scanning starts.**



- When a broadcast is detected, automatic scanning stops.
- If you don't want to store the detected TV station, repeat step 6 for another station.

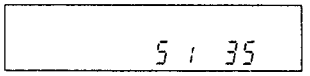
7. **Press SELECT.**
8. **Press CH/SET to select the tuner channel position where you wish to store that TV station.**



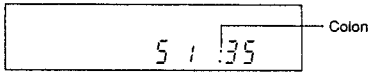
9. **Press CANCEL.**
   - The colon will disappear when the TV station is stored.
10. **Repeat steps 4 through 9 for other receivable TV stations.**
11. **Press DISPLAY to disengage the Channel Set mode.**

TO DELETE STORED CHANNELS

1. Press CH/SET to select the channel position you want to skip.
2. Press CH SET.



3. Press CANCEL.

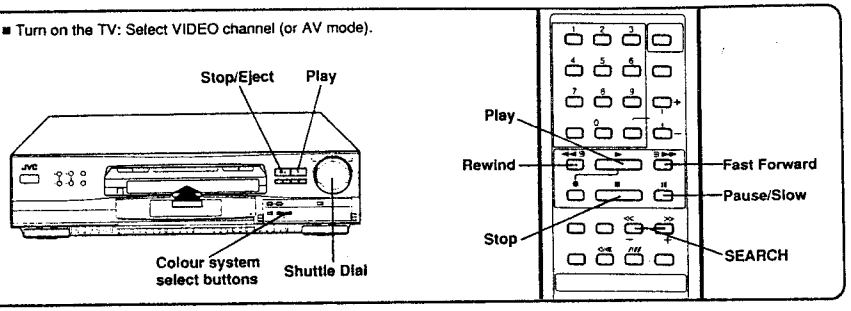


- The colon will appear when the station is deleted. Channel position 5 can no longer be chosen by CH/SET buttons.

4. Press DISPLAY to disengage the Channel Set mode.

Playback

■ Turn on the TV: Select VIDEO channel (or AV mode).



Basic Operations

IMPORTANT:
- Normally set colour system detection to "AUTO" by pressing the Master button. If a tape is not played back correctly, try setting the Master and Sub buttons manually. ☞ p. 16. After playback is completed, it is recommended that you re-set the Master button to AUTO.
- If viewing an NTSC tape, set the Sub button to match the type of TV being used. ☞ p. 17.
- For more information on multi-system compatibility, ☞ p. 15.

1. Load a cassette.
- The recorder power will come on automatically.
- The counter will re-set to "0:00:00" automatically.
- If the safety tab on the cassette is removed, playback will start automatically.

2. Press Play to start playback.

3. Press Stop to stop playback.
- To rewind the tape, press Rewind or turn the Shuttle to the left and release it.
- To fast-forward the tape, press Fast Forward or turn the Shuttle to the right and release it.
- To stop rewind or fast-forward, press Stop.

4. Press Stop/Eject on the recorder to eject the tape.

Variable-Speed/High-speed Search, Still Playback/Frame Advance/Forward Slow Motion

During Playback or Still:
- Press either SEARCH button for variable-speed search.
- The more times the button is pressed, the faster the playback picture will move.
- To decrease speed, press the button for the opposite direction.

During Playback:
- Press Fast Forward for high-speed forward search, or Rewind for high-speed reverse search.
- *For short searches, keep Fast Forward or Rewind pressed for more than 2 seconds. When released, normal playback will continue.*
- Press Pause/Slow to view a still picture.
- *Press again to advance the picture frame by frame.*
- Press Pause/Slow for 2 seconds for slow motion.

Other Functions

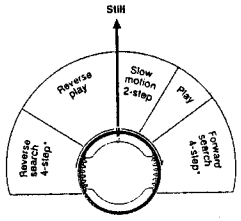
Shuttle Dial Control

You can view pictures in slow to fast motion.

During Still or Playback...

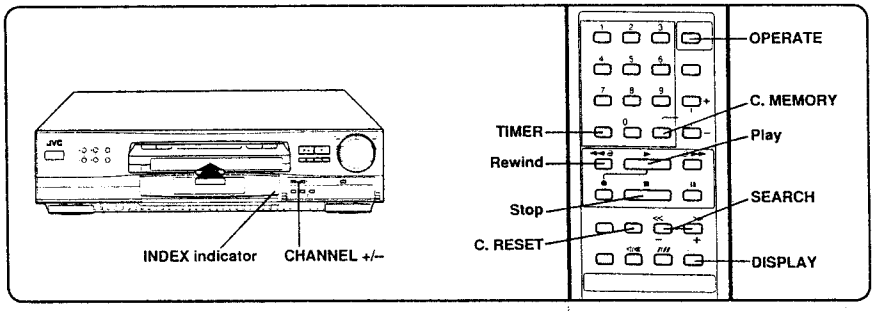
1. Turn the Shuttle to the right for forward slow motion and search.
   - Release the Shuttle for a still picture, or...
   - For fast-forward with a visible picture, turn the Shuttle all the way to the right and release it within 1 second.
2. Turn the Shuttle to the left for reverse play and search.
   - Release the Shuttle for a still picture, or...
   - For rewind with a visible picture, turn the Shuttle all the way to the left and release it within 1 second.
   - Slow motion is not possible in the reverse direction.

To resume normal playback, press the Play button.



*Only 3-step in NTSC SP mode.

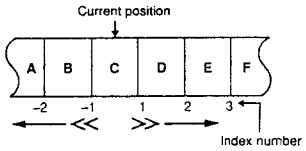
NOTES:
- The recorder automatically stops when still continues for more than 5 minutes.
- If the still picture is unstable, use the CHANNEL buttons to correct the picture.
- During search playback, some noise bars will appear.
- When playing back LP recordings or NTSC recordings in the search, still, or frame-by-frame playback mode, the picture will be distorted, and there will be a loss of colour.
- There is no audio during search, slow, still, or frame-by-frame playback.
- When a new tape is inserted, the recorder enters the automatic tracking mode automatically.



Index Search

This function gives you quick access to any one of 9 index codes in either direction. Your recorder automatically marks index codes at the beginning of each recording.

During Stop:
1. Press SEARCH << or >>. The INDEX indicator will light and "–1 (or 1)" will be displayed and search will begin in the corresponding direction.
2. If you wish to access index codes 2 through 9, press SEARCH repeatedly until the correct index number is displayed.
   Ex.: To locate the beginning of B from the current position, press SEARCH << twice.
   To locate the beginning of D from the current position, press SEARCH >> once.



- When the specified index code is found, playback will start automatically.

Manual Tracking

Your video recorder is equipped with automatic tracking control. If you wish to adjust tracking manually, you can override this function.

During Playback:
1. Press the recorder's CHANNEL +/– buttons simultaneously.
2. Press CHANNEL + or – to adjust tracking.
   - Press CHANNEL +/– simultaneously to return to automatic tracking.

During Slow:

1.Simply press CHANNEL + or – to adjust tracking.

Repeat Playback

During Playback:
1. Press Play for more than 5 seconds, and release.
   - The Play indicator ( ) on the display panel will blink slowly.
   - The tape will be played all the way to the end, 20 times automatically, and then stop.
2. To stop playback at any time, press Stop.

Counter Memory

During Playback:
1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET at a point you wish to locate later.
   - The counter will read "0:00:00".
3. Press C.MEMORY.
   - The M indicator will light on the display panel.
4. When you wish to return to that point, press Stop and then Rewind.
   - The tape will rewind and stop at about "0:00:00" automatically.
5. To cancel the Counter Memory mode, press C.MEMORY again.

Next Function Memory

During Stop:

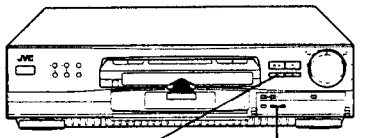
For automatic start of playback after the tape is rewound:
1. Press Rewind.
2. Press Play within 2 seconds.

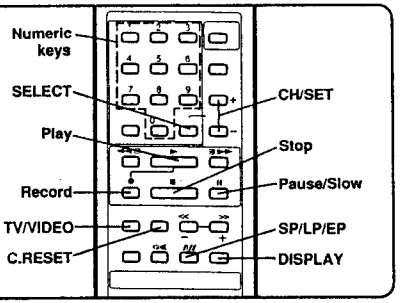
For automatic power off after the tape is rewound:
1. Press Rewind.
2. Press OPERATE within 2 seconds.

For automatic timer standby after the tape is rewound:
1. Press Rewind.
2. Press TIMER within 2 seconds.

Recording

■ Turn on the TV: Select VIDEO channel (or AV mode).





Basic Operations

IMPORTANT:
- Press the Master button so "AUTO" lights up on the display panel.
- For more information on multi-system compatibility, ☞ p. 15.

1. **Load a cassette.**
   - The recorder power will come on automatically. Be sure that the VIDEO indicator is lit; if not, press TV/VIDEO so that it lights.
2. **Press CH/SET or the numeric keys to select the channel you wish to record.**
3. **Press SP/LP/EP to select the tape speed.**
4. **Press Record and Play simultaneously.**
5. **Press Pause/Slow to pause recording.**
6. **Press Play to resume recording.**
7. **Press Stop to stop recording.**

To Watch Another Programme While Recording

During Record:
1. Press TV/VIDEO. The VIDEO indicator on the display panel and the TV broadcast being recorded will disappear.
2. Use the channel controls on the TV to select the other channel you wish to view.
   - The programme selected with the TV's channel controls will appear on the TV screen while the one selected with the video recorder's channel controls will be recorded on the tape.

Elapsed Recording Time Indication

When you need to know the exact time of a recording.
1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET before starting recording or playback.
   - The counter will be reset to "0:00:00" and show the exact elapsed time as the tape runs.

Other Functions

Instant Timer Recording (Off Timer)

You can start a recording and then set the recorder to shut off automatically after a set duration.

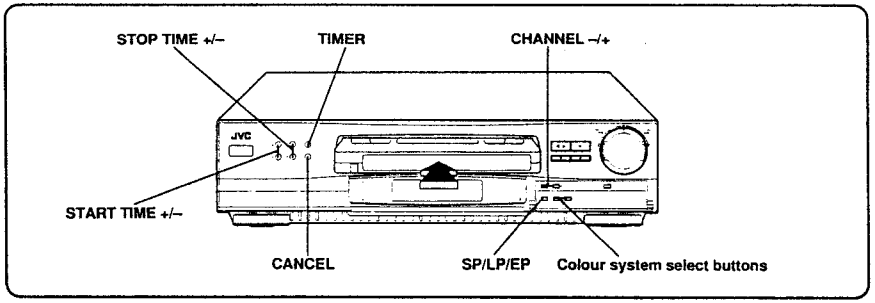
During Record:
1. Press Record on the recorder. "ITR" and "0:30" indications appear, advising that power will switch off after 30 minutes.
2. Press Record again to delay the off-time by 30-minute increments (up to 4 hours).
   - For more precise setting, use the remote control's SELECT and CH/SET buttons to set the exact time required (possible up to 8 hours and 59 minutes).

Display Button

When you wish to check the time, date, or counter reading
1. Press DISPLAY to display the current clock time.
2. Press DISPLAY again to display the current date.
3. Press DISPLAY again to display the counter reading.

NOTES:
- To start recording with the recorder's Record button, press it once on its own.
- After pause, when recording is resumed, a few frames recorded before the pause may be overlapped by the new recording. This is meant to reduce picture distortion and is not a malfunction.
- The recorder automatically stops when record-pause continues for more than 5 minutes.
- If the Record button does not work, check to see if the cassette's safety tab has been removed.
- The channel cannot be changed while recording is in progress. To change the channel, engage the record-pause mode, then change the channel.
- The recorder automatically rewinds when the end of the tape is reached during recording.
- The recorder automatically places an index code on the tape every time recording begins. For information on the Index Search function, ☞ p. 9.

Timer-Recording — Express Timer —



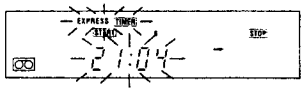
The "Express Timer" is the quickest method of programming your video recorder's timer. TV shows to be broadcast within 24 hours can be programmed for automatic recording simply by pressing three buttons (conveniently numbered) on your recorder's control panel.

TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.

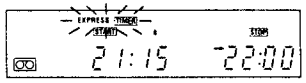
Preparation

Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.
- The display panel will show the channel being received.
- To change the channel, press CHANNEL.
- Set the colour system select buttons to the appropriate mode. ☞ p. 16
- To change the tape speed, press SP/LP/EP.

1. **Press START TIME +.**
   - The current time will appear on the display panel.
2. **Press START TIME +/– to set the start time.**
   - START TIME + (STOP TIME +) advances the time and START TIME – (STOP TIME –) reverses the time.
   - Press briefly to change by 1 minute. Hold the button down to change by 30-minute increments.



   - After the start time is set, the date (today or tomorrow) and channel will be displayed for 3 seconds.
3. **Press STOP TIME +.**
   - The start time will be transferred over to the stop time position.
4. **Press STOP TIME +/– to set the stop time.**



5. **Press TIMER.**
   - The recorder will enter the Timer mode and power will go off.

TO CANCEL THE PROGRAM

While timer programming, press CANCEL.
- Pressing CANCEL again disengages the Timer Program mode.

Or...
While in the Timer mode, first press TIMER to disengage the Timer mode, and press START TIME+. Then press CANCEL twice.

TO CHECK PROGRAMMED SETTINGS

While in the Timer mode, press START TIME + to check the settings you have programmed. DO NOT press START TIME + while the Timer mode is cancelled because this will clear the programmed data for a new entry.

To use the recorder after setting to the Timer mode, ☞ p.12

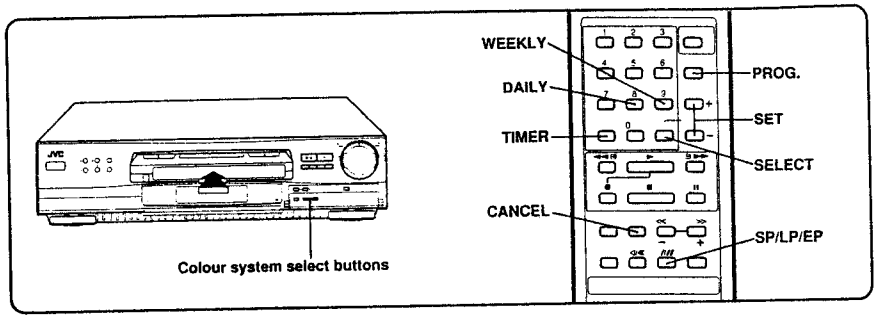
Usable Cassettes And Their Recording Times

This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS video signals only. It is not possible to play back a recorded Super VHS tape.

Type of Cassette	Recording/Playback Time (minutes)		Recording/ Playback System
	SP Speed	LP Speed	
E-240	240	480	PAL/SECAM/MESECAM
E-180	180	360	PAL/SECAM/MESECAM
E-120	120	240	PAL/SECAM/MESECAM
E-90	90	180	PAL/SECAM/MESECAM
E-60	60	120	PAL/SECAM/MESECAM
E-30	30	60	PAL/SECAM/MESECAM

Type of Cassette	Recording/Playback Time (minutes)		Recording/ Playback System
	SP Speed	EP Speed	
T-160	160	480	NTSC
T-120	120	360	NTSC
T-90	90	270	NTSC
T-60	60	180	NTSC
T-30	30	90	NTSC

Timer-Recording (cont'd) — Standard Timer Programming —



Standard timer programming can be done with the remote control while referring to the recorder's display panel. Make sure that the display panel shows the correct current time.

Preparation

Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.
- Set the colour system select buttons to the appropriate mode. ☞ p. 16

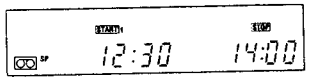
1. Press PROG. until the display panel shows the following.

- You are ready to input data into Program No. 1.
- To change the program number, press PROG.

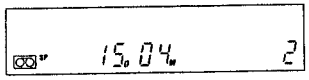
2. Press SELECT.

3. Press SET to set the start hour, and then SELECT.

4. Repeat step 3 to set the minute and stop time.



5. Press SET to set the day, month and channel, and then SELECT.

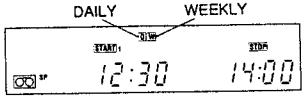


- The current program number will blink.
- If you need to set another program, repeat steps 1 through 5.

6. Press SP/LP/EP to select the tape speed.

WEEKLY program : During steps 1 through 6, press numeric key "9" on the remote control.

DAILY program : During steps 1 through 6, press numeric key "8" on the remote control.



7. Press TIMER.
- The recorder will enter the Timer mode and power will go off.

TO MAKE CORRECTIONS

Press SELECT to make the item you want to change blink, and input new data.

TO CHECK AND CANCEL PROGRAMS

To check preset programs:
1. Press PROG. until the program settings are displayed.
   - Program 1 is displayed with the number blinking.
2. Press SELECT to review the program contents in succession.
3. To check another program, press PROG. again.

To cancel the program:
4. Press CANCEL.
   - You can press CANCEL at any stage while the program is open.

TO USE THE RECORDER AFTER SETTING TO THE TIMER MODE

For safety, your recorder disables all other functions while in the Timer mode.
- Press TIMER to disengage the Timer mode.
- To re-engage the Timer mode, press TIMER.

Error Indications

The following error indications may appear on the recorder when you press the TIMER button to engage the Timer Standby mode. Here's why, and what you should do.

- "TIMER" and "📼" on the display panel continue blinking.
  WHY: There is no cassette in the recorder.
  WHAT TO DO: Insert a cassette.

- The cassette is automatically ejected. "TIMER" and "📼" continue blinking.
  WHY: The inserted cassette has its safety tab removed.
  WHAT TO DO: Insert a cassette with its safety tab intact. Or cover the safety tab hole of the cassette with adhesive tape and re-insert it. ☞ p.6.

- "TIMER" blinks for 10 seconds and the Timer Standby mode is cancelled.
  WHY: There are no preset programs in memory, or they have all been incorrectly preset.
  WHAT TO DO: Check the programmed data and re-program it as necessary. Press TIMER again.

Other Indications

- "TIMER" steady lit (with clock display).
  WHY: The recorder is in the Timer Standby mode. This is the normal display you should see when you press the TIMER button.

- " " and "TIMER" steady lit.
  WHY: Normal display while timer-recording is in progress.

- The cassette was ejected, with power off and "TIMER" and "📼" are blinking.
  WHY: This means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.

- "0:00" blinking.
  WHY: This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because the recorder's power plug was pulled from the AC outlet.
  WHAT TO DO: Set the clock. ☞ p.6.
- If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.

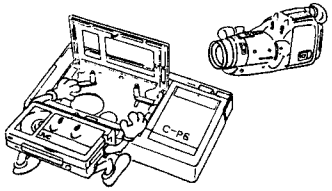
Other Functions

Locking The Recorder's Controls

To avoid unwanted operation and prevent accidental recording...
1. Press the remote control's OPERATE button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   - The Child Lock indicator (–) will appear on the display panel.
2. Child Lock is cancelled when you switch the recorder's power on with the remote's OPERATE button.
   - Pressing the TIMER button during timer-recording also cancels the Child Lock mode.

NOTES:
- While Child Lock is engaged, make sure you keep your remote control in a safe place inaccessible to children.
- Timer-recording is possible in the Child Lock mode. After timer-recording is done, Child Lock remains in effect.

To Watch A Compact VHS Tape



Compact VHS camcorder recordings (PAL) can be played on your video recorder. Place the recorded cassette into a C-P6 Cassette Adapter and it can be used like any full-sized VHS cassette.

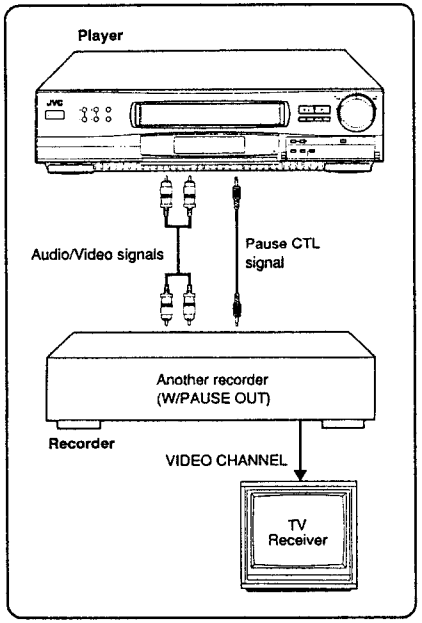
Special Note On Head Cleaning

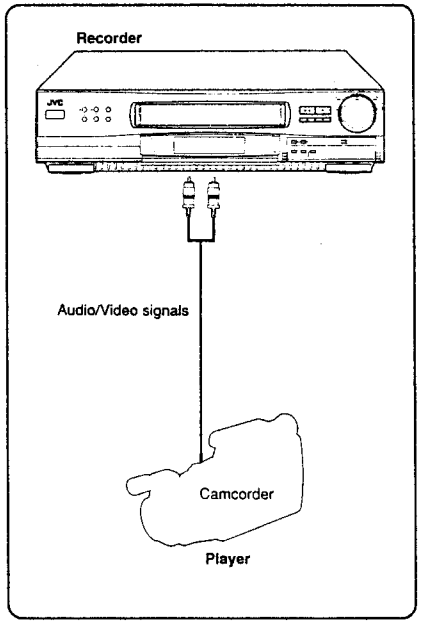
Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Although this model is equipped with a built-in head cleaner which automatically cleans the heads, reducing the likelihood of dirty heads, if such troubles are encountered please consult the nearest JVC dealer.

Auto Head Cleaner

A built-in head cleaner automatically cleans the video heads and head drum whenever a tape is loaded or unloaded to reduce head clogging.

Editing





Editing To/From Another Recorder

Preparation

Connect the player's AUDIO and VIDEO OUT connectors to the recorder's AUDIO and VIDEO IN connectors.

1. **Select the recorder's external input mode.**
   - With this video recorder, press the numeric key "0". "AU" will appear instead of a channel number.
2. **Put the player in the Play mode.**
3. **Put the recorder in the Record mode.**

NOTES:

- Your video recorder can be used as either the recording deck or the source player when editing tapes. When used as the source player in combination with another video deck which is preroll-capable and equipped with a Pause Control Output terminal, your recorder's PAUSE terminal can accept preroll commands for synchronized preroll editing.
- NTSC tapes being played back in the NTSC — PAL (PLAYBACK) mode (☞ p.17) cannot be dubbed to another recorder.
- When you use your recorder as the recording deck, select the recording tape speed with the SP/LP/EP button.

Editing From A Camcorder

Preparation

Connect the camcorder's AV OUT connector to the recorder's AUDIO and VIDEO IN connectors.

1. **Select the recorder's external input mode by pressing numeric key "0". "AU" will appear instead of a channel number.**
2. **Put the camcorder in the Play mode.**
3. **Put the recorder in the Record mode.**

NOTE:

- If the camcorder is equipped with the Master Edit Control system, you can control the recorder using the camcorder's controls. See the camcorder's instruction manual for operating procedures.

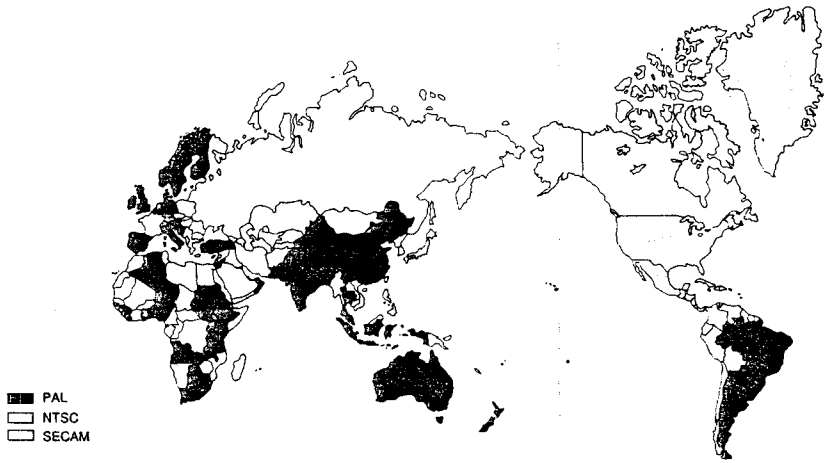
IMPORTANT:

- To edit, both the player and the recorder must be of the same colour system.
- PAL, SECAM and NTSC camcorders can be used as a player for editing.
- For more information on multi-system compatibility, ☞ p. 15.

Information On Multi-System Compatibility

World's Colour TV Broadcasting Systems

This recorder incorporates the circuitry necessary to record or play back PAL, SECAM and NTSC signals from most TV broadcasting systems in the world.



Multi-system compatibility

Colour System	PAL			SECAM			NTSC	
Broadcasting System	B/G	D/K	I	B/G	D/K	L*1	M	—
Recording & Reception System	PAL	PAL	PAL	MESECAM	MESECAM	SECAM	NTSC 3.58	NTSC 4.43*2
Major Countries	Germany, Austria, Italy, Kuwait, U.A.E., Singapore, Malaysia, Indonesia, Thailand, India, Australia	China, Mongolia	United Kingdom, Hong Kong	Saudi Arabia, Lebanon, Iran, Iraq, Egypt, Morocco, Greece	Ivory Coast, Russia, Bulgaria, Czech Rep., Slovakia, Poland, Rumania	France	U.S.A., Canada, Japan, S. Korea, Taiwan, Philippines, Mexico	—

*1 It is not possible to receive and record SECAM L broadcasts with this recorder.

*2 In the case of NTSC 4.43 recordings, only tape-to-tape dubbing, by using a video cassette recorder capable of playing back NTSC 4.43 recordings, is possible.

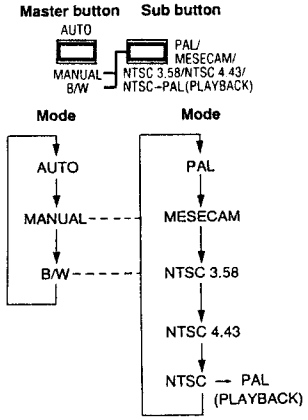
PAL, SECAM, MESECAM, And NTSC

- PAL, SECAM and NTSC are three different colour TV systems.
- MESECAM is the designation for tapes with SECAM signals that have been recorded on MESECAM-capable PAL recorders.

Information On Multi-System Compatibility (cont'd)

Setting Of The Colour System Select Buttons

- Use these two buttons on the recorder's front panel to select the colour system. Pressing the buttons changes the modes as illustrated below. An indicator on the display panel will show which mode is selected.
- Usually the Sub button is used only when the Master button is set to MANUAL or B/W (Black & White). However, when NTSC recording or playback is being done, set the Sub button to the appropriate mode (NTSC3.58/NTSC4.43/NTSC→PAL(PLAYBACK)) even if the Master button is set to AUTO.

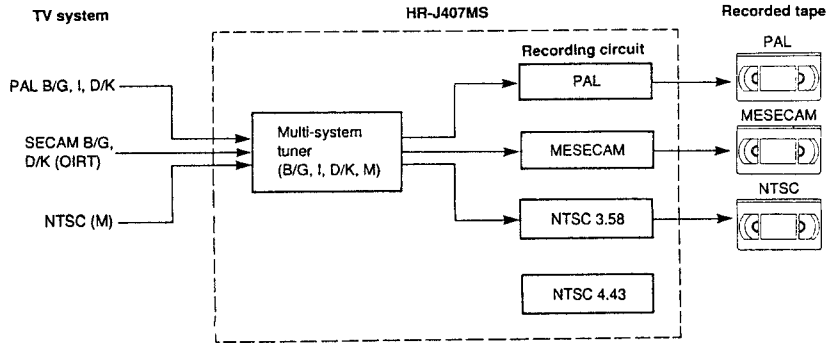


Mode Display	Description
AUTO (Colour Signal)	Usually set to this mode. This mode automatically detects and adjusts to the colour system being recorded or played back. When it does not perform properly, set the colour system manually.
MANUAL (Colour Signal)	For recording, there is a choice of 4 selectable modes; PAL/MESECAM/NTSC3.58/NTSC4.43. Use the Sub button to select the mode that matches the colour signal being received. For playback, there is an additional mode which allows NTSC tapes to be played back and viewed on PAL TVs.
B/W	Use this mode when recording or playing back a black & white programme, or for recording or playing back colour signals in black & white. Choose the appropriate Sub button setting, in the same way as with the MANUAL mode.

NOTE:
- When SECAM signals are being received in the AUTO mode, "MESECAM" will be displayed on the display panel.

Off-Air Recording

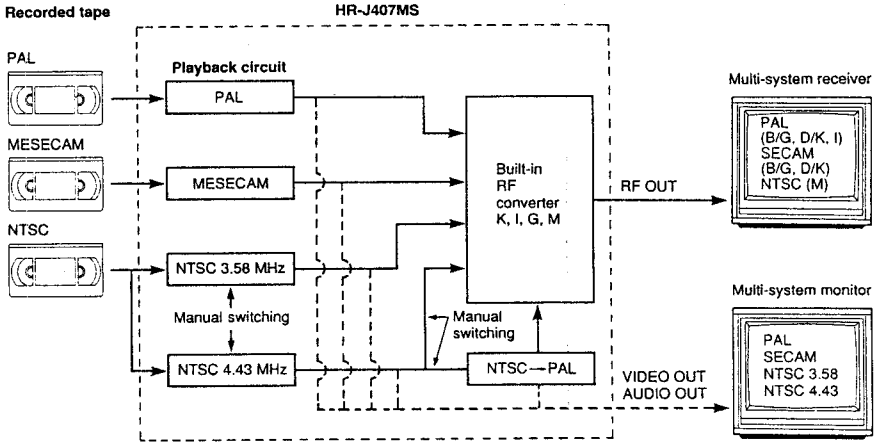
The built-in multi-system tuner is capable of receiving PAL B/G, I and D/K, and SECAM B/G and D/K, and NTSC broadcasts.



NOTE:
- This model does not operate in BRAZIL (PAL-M) or ARGENTINA (PAL-N).

Playback

This recorder can play back all 3 types of recorded tape.

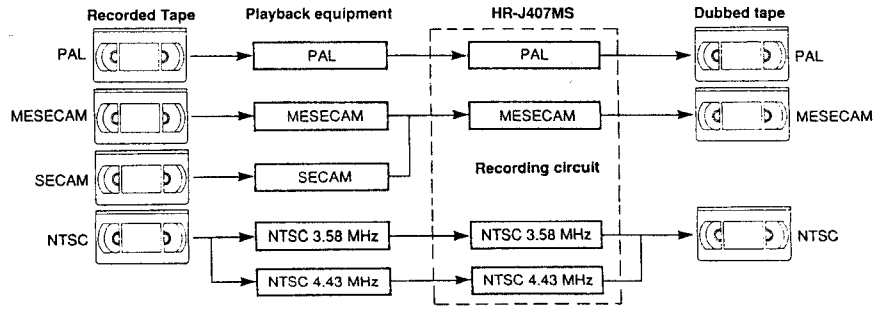


NOTES:
- When viewing NTSC tapes on a PAL TV set:
  - The picture may shrink vertically with black bars appearing at the top and bottom of the screen. This is not a malfunction on the part of the video recorder nor the TV.
  - The picture may roll up or down. This can be corrected using the V-HOLD control found on most TVs. (This cannot be corrected if the TV does not have a V-HOLD control.)
  - During search, still, or frame-by-frame playback, the picture will be distorted, and there may be loss of colour.

ATTENTION:
When this recorder is connected to a multi-systemTV, it may happen that no colours appear on the screen if the colour system select switch of the TV is adjusted to the AUTO position. In such a case, change the setting of the colour system select switch of the TV to the position which corresponds to the setting (K, I, G, M) of the RF converter system select switch on the rear panel of the recorder.

Tape-To-Tape Editing

There are 4 different types of recorded tape, depending on the signal recorded.



Precautions

Please follow these safety precautions. Not doing so may result in damage to the recorder, remote control, or video cassette.

- **Avoid extreme heat and direct sunlight.**
- **Avoid extreme cold.**
- **Avoid extreme humidity.**
- **Avoid dust.**
- **Avoid places subject to vibrations.**
- **Avoid strong magnetic fields.**
- **Do not block the recorder's ventilation openings.**
- **Do not place anything heavy on the recorder or remote control.**
- **Do not place anything which might spill on top of the recorder or remote control.**
- **Do not place the recorder on cushions, pillows, or thick carpeting.**
- **Use the recorder in a stable, horizontal position only.**

When transporting

- Be sure to remove cassette from recorder before packing.
- Avoid violent shocks to the recorder during packing and transport.

Beware of moisture condensation

Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.

Place cassettes in cassette cases and store vertically.

ATTENTION:
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

In Case Of Difficulty

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
No power is applied to the recorder.	■ Is the power cord disconnected? — Connect it.
Clock is functioning properly, but the recorder cannot be powered.	■ Is "TIMER" displayed on the display panel? — Press the TIMER button to extinguish the display.
Tape stops during rewind or fast-forward.	■ Is the C. MEMORY button pressed? — Press again to make "M" disappear from the display panel.

RECORDING PROBLEMS

Symptoms	Check points
Recording cannot be started.	■ Is a cassette loaded? ■ Is the safety tab on the cassette removed? — Reseal the slot with adhesive tape.
TV broadcasts cannot be recorded.	■ Has "AU" been selected? — Set to the desired channel.
Tape-to-tape editing or camera recording is not possible.	■ Is the camcorder or another video recorder correctly connected? ■ Are all necessary power switches turned ON? ■ Has "AU" been selected? — Set to "AU".
Timer recording is not possible.	■ Have you set the clock correctly and programmed the timer correctly? — Check once again. ■ Is "TIMER" displayed on the display panel? — If not, press the TIMER button to display "TIMER".

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running.	■ If you are using RF OUT connection, is the TV receiver's channel selector set to the correct video channel? — Set it to the RF converter channel (UHF 36). (☞ p.6) ■ If you are using AV connection, is the TV receiver set to the AV mode? — Set it to the AV mode.
Noise appears during visual search.	■ This is normal.
Noise appears during normal or slow-motion playback.	■ Is the automatic tracking mode engaged? — Try manual tracking. (☞ p.9)
Playback picture is blurred or interrupted while TV broadcasts are clear.	■ Video heads may be dirty. — Head cleaning is necessary. Consult your JVC dealer. (☞ p.13).
No sound accompanies the playback picture.	■ Is the SYSTEM switch set to the correct position? — Set it to the correct position for the TV broadcast system used in your area. (☞ p.5)

OTHERS

Symptoms	Check points
Whistling or howling is heard from TV during camera recording.	■ Move camcorder or camera's microphone away from TV or reduce TV sound volume.
Channel cannot be switched.	■ Is recording in progress? — Press the Pause/Slow button, change the channel, and press the Play button.
Remote control does not function.	■ Are the batteries discharged? — Replace with new ones.
"Snowy picture" on screen when viewing TV programmes while recording another programme.	■ Is the VIDEO indicator lit on the display panel? — Press the TV/VIDEO button so that the indicator extinguishes.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Top cover

1. Take out 4 screws Ⓐ and 1 screw Ⓑ.
2. To remove the top cover, slide in direction of arrow and lift away.

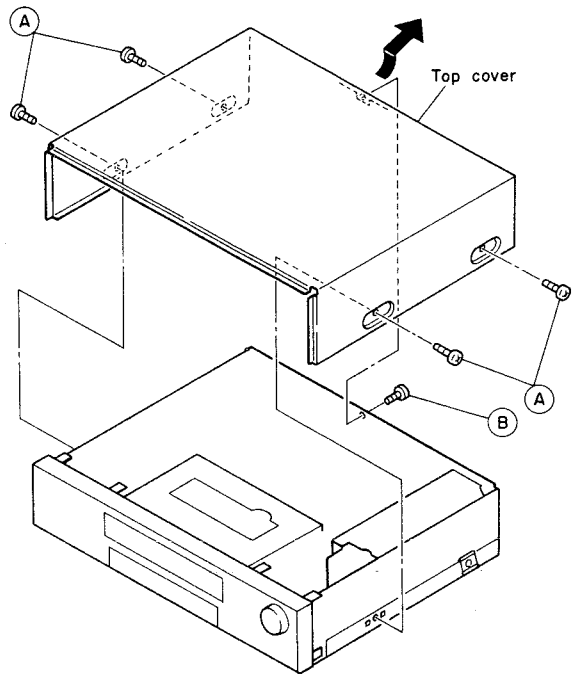


Fig. 1-1-1 Top cover

1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 4 tabs ⓐ of the front panel assembly from the upper side of the chassis.
3. Pull the front panel assembly forward you to disengage 5 tabs ⓑ of the front panel assembly from the bottom of the chassis.
4. Disconnect connector Ⓒ from the SHUTTLE assembly of the front panel assembly, then remove the front panel assembly.

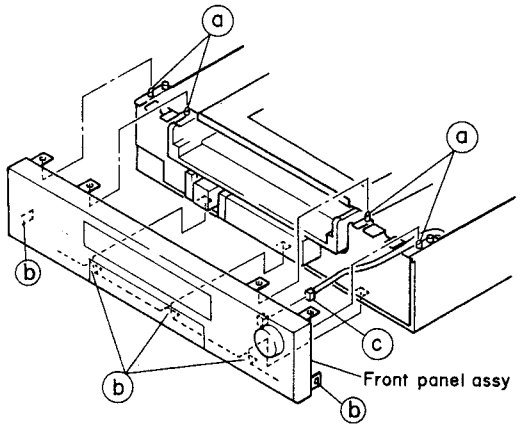


Fig. 1-1-2 Front panel assembly

1.1.3 Bottom cover

1. Remove the top cover, then overturn the set.
2. Take out 3 screws Ⓒ and 1 screw Ⓡ, then remove the bottom cover in the direction of arrow and lift away.

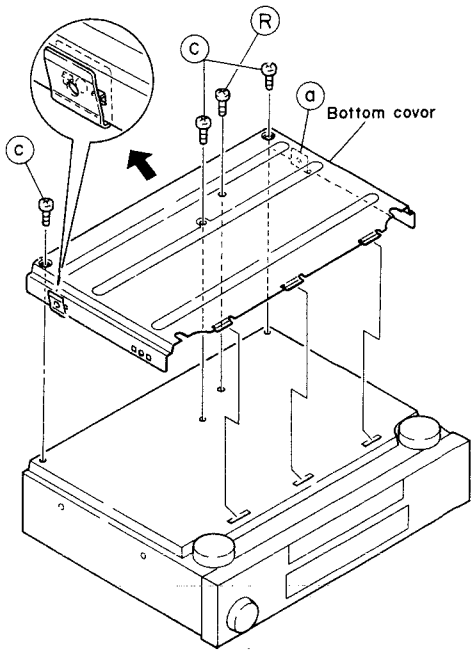


Fig. 1-1-3 Bottom cover

1.1.4 SWITCHING REGULATOR board assembly

1. Remove the top cover.
2. Take out 3 screws Ⓓ and 2 screws Ⓔ.
3. Remove the SWITCHING REGULATOR board assembly.

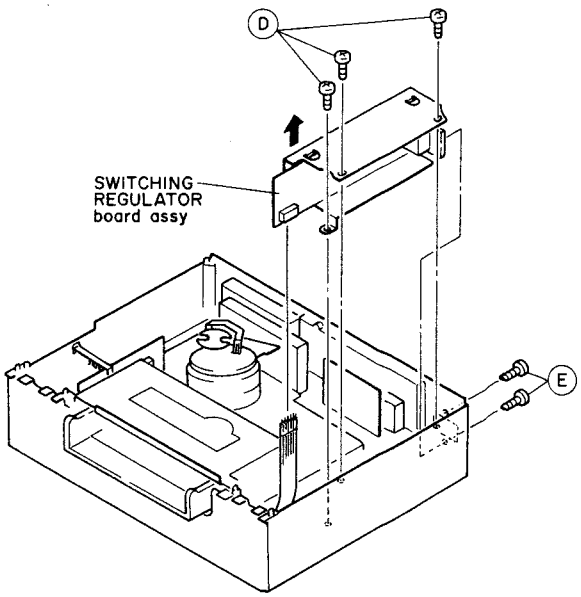


Fig. 1-1-4 SWITCHING REGULATOR board assembly

1.1.5 DISPLAY & SWITCH board assemblies

1. Remove the top cover and front panel.
2. Disengage 6 claws ⓐ and 4 claws ⓑ from the chassis.
3. Disconnect connector CN1 from the DISPLAY board assembly.
4. Remove the DISPLAY & SWITCH board assemblies in direction of arrow.

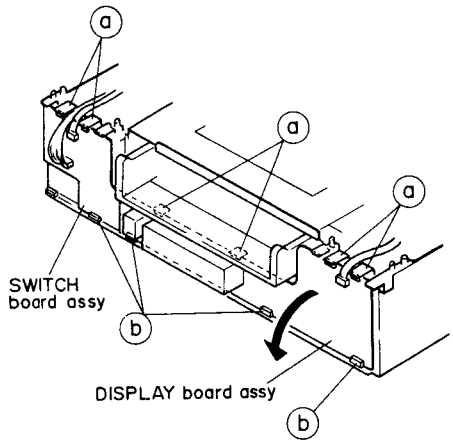


Fig. 1-1-5 DISPLAY & SWITCH board assemblies

1.1.6 Cassette housing assembly

1. Remove the top cover, front panel.
2. Take out 4 screws Ⓕ and 2 screws Ⓜ.
3. Remove the cassette housing assembly in direction of arrow.

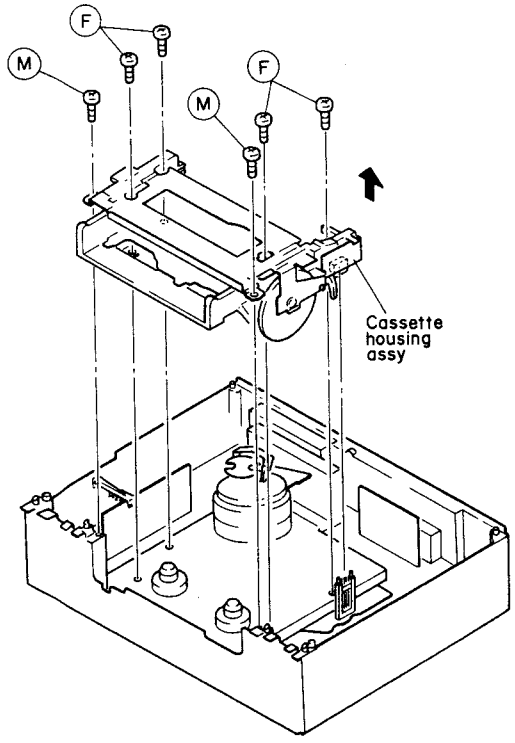


Fig. 1-1-6 Cassette housing assembly

1.1.7 PRE/REC board assembly

1. Remove the top cover.
2. Take out 2 screws Ⓖ.
3. Disconnect connector CN502 from the PRE/REC board assembly.
4. Remove the PRE/REC board assembly with the shield in direction of arrow.

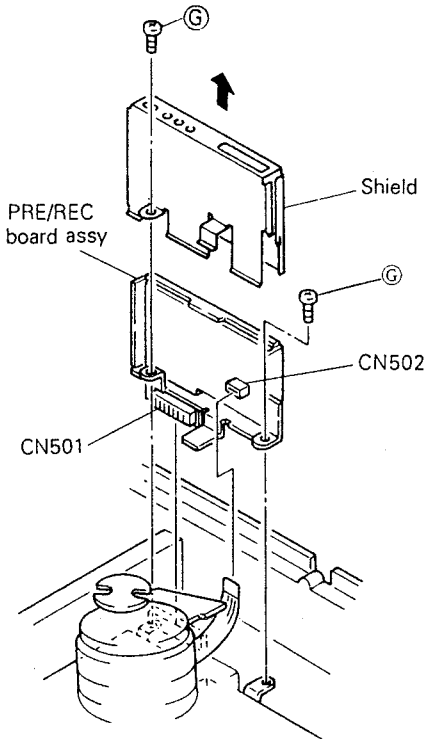


Fig. 1-1-7 PRE/REC board assembly

1.1.8 Drum assembly

1. Remove the top cover.
2. Take out 1 screw Ⓠ, then remove the earth plate.
3. Remove the inertia plate, washer and head cleaner assembly, then disconnect a connector.
4. Take out 3 screws Ⓛ, then remove the drum assembly.

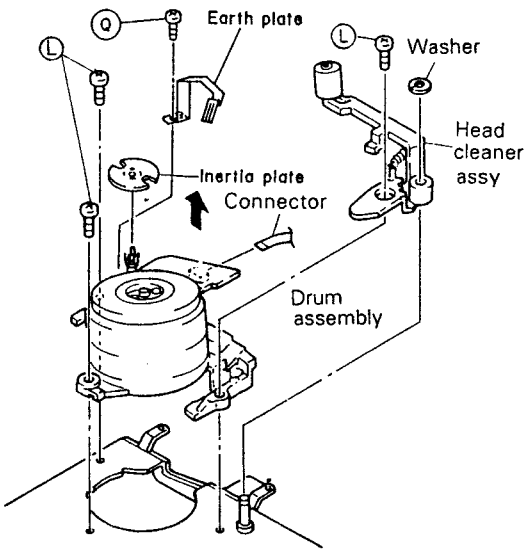


Fig. 1-1-8 Drum assembly

1.1.9 Cassette housing installation

Note: *Observe the mechanical phase and position (see figure)when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.*

1. Check that the marks of the control cam and pinch roller cam are aligned. If necessary, turn the worm clutch by hand to adjust the position.

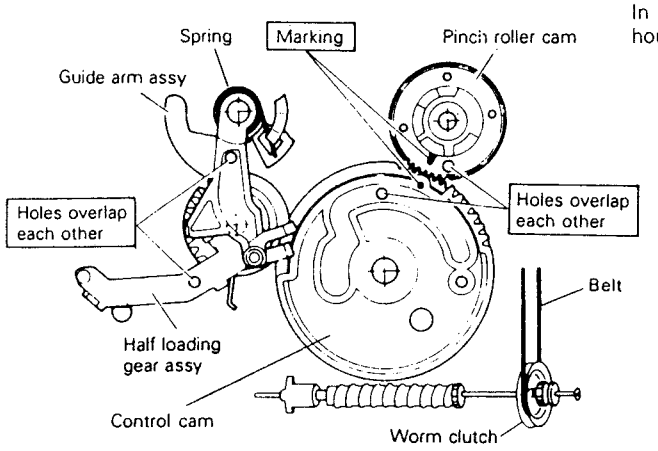


Fig. 1-1-9 Control cam and pinch roller cam position

2. Confirm that the clutch of the worm clutch assembly is locked. If necessary, engage the locked.

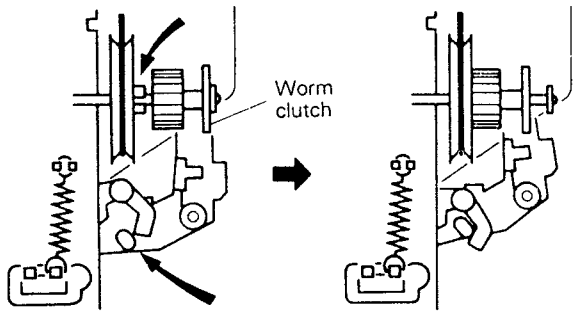


Fig. 1-1-10(a) Not locked Fig. 1-1-10(b) Lock engaged

3. Install the front panel as shown in Fig. 1-1-11 and re-engage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.

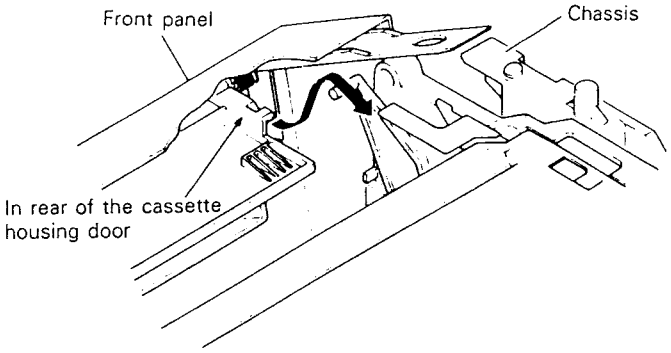


Fig. 1-1-11 Cassette housing door

1.1.10 Main deck assembly

1. Remove the top cover, front panel, cassette housing assembly and DISPLAY/SWITCH board assembly.
2. Take out 2 screws Ⓗ and remove the mecha bracket.
3. Take out 1 screw Ⓙ and 2 screws Ⓚ, then disengage 3 connectors ⓐ from the Main deck.
4. Remove the main deck assembly in direction of arrow.

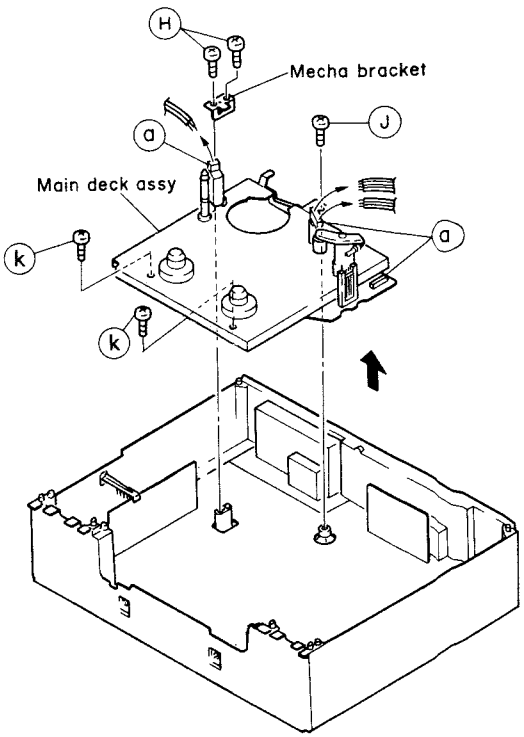


Fig. 1-1-12 Main deck assembly

1.1.11 MAIN and TUNER/IF board assemblies

1. Remove the top cover.
2. Take out 9 screws Ⓝ and 1 screw Ⓟ from the chassis.
3. Remove the MAIN and TUNER/IF board assemblies in the direction of arrow.

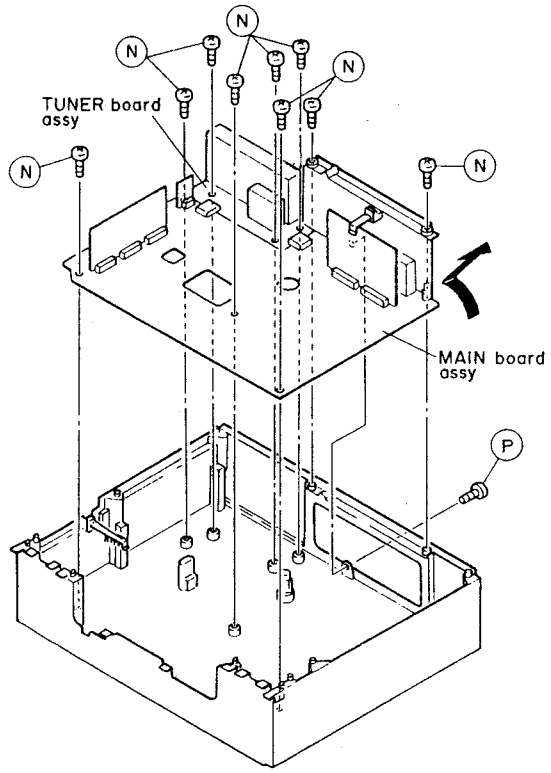


Fig. 1-1-13 Main and TUNER/IF board assemblies

1.2 SERVICE CAUTIONS

1.2.1 Connections for MAIN board and SWITCHING REGULATOR board assembly

1. Disassemble the main deck assembly and SWITCHING REGULATOR borad assembly from the other units and make connections as follows.

NO.	CONNECTION					DISCRIPTION	CABLE PART NO.
①	PRE/REC board	CN501	←→	MAIN board	CN201	pin18	PEMCJ0976-118
②	DECK TERMINAL board	CN1	←→	MAIN board	CN601	pin16	PWJ30802-1645
③	A/C HEAD	CN1	←→	MAIN board	CN1	pin4	PUJ60910-4
④	FULL ERASE HEAD	CN1	←→	MAIN board	CN2	pin2	PUJ60910-2

Table 1-2-1 Patch cords list (PTU93005B)

1.2.2 Connections for MAIN board and SWITCHING REGULATOR board assembly

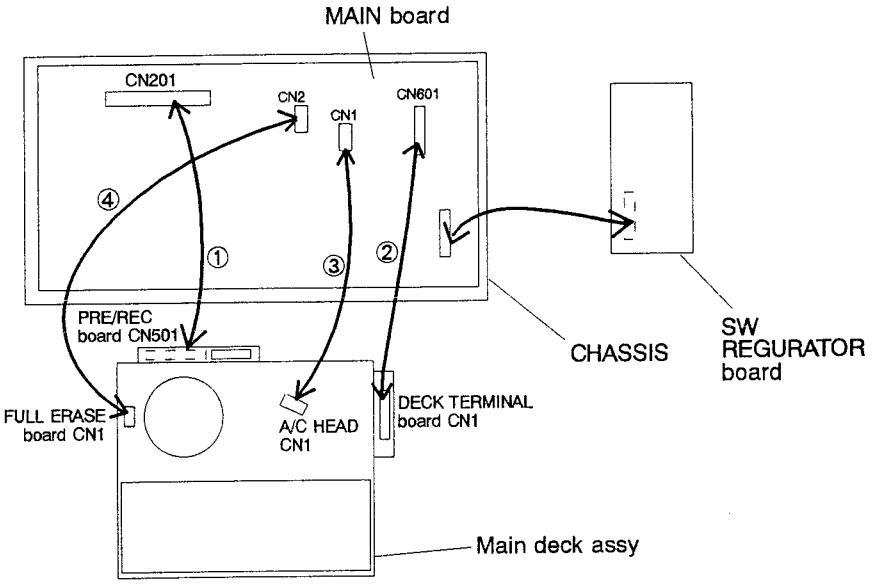


Fig. 1-2-1 Connections for patch cords

1.2.3 Setup for mechanism service, VIDEO UNIT board service

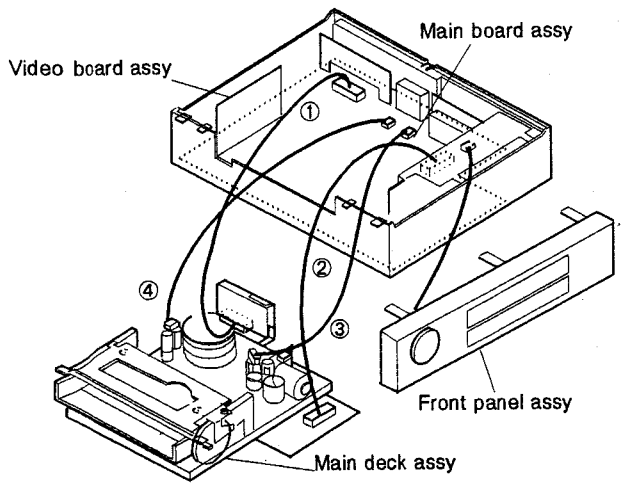


Fig. 1-2-2 Setup for mechanism service, VIDEO UNIT board service

1.2.4 Setup for MAIN board assembly service (For bottom side service)

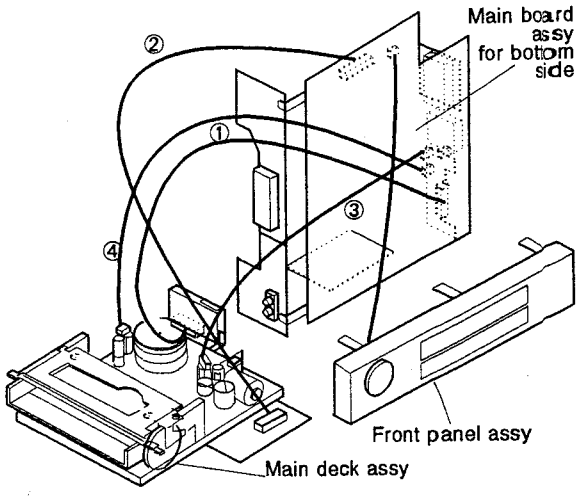


Fig. 1-2-3 Setup MAIN board assembly service

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

1) Disconnect VCR from AC power before soldering.
2) Avoid imparting stress to wires when disengaging connectors.
3) Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4) Use care not to damage tabs, claws, etc. during repairs.
5) Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6) When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.
See Sec.1 DISASSEMBLY.

2.1.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2) Connect pins 2 and 3 of Main board connector CN601.
3) Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

2.1.3 Manual removal of loaded tape

In event of failure which leaves the tape in the loaded position, remove it by the following procedure.

1) Take off the top cover and main deck assy in order to wind the tape on the reel.
See Sec.1 DISASSEMBLY.
2) Turn the mode motor belt by hand in the unloading direction to return the loading posts to the stop position, refer Fig. 2-1-1.

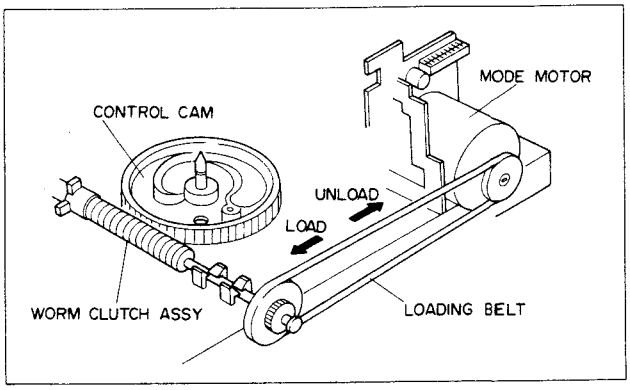


Fig. 2-1-1

3) From the bottom, turn the clutch unit by hand to wind the slackened tape onto the reel.

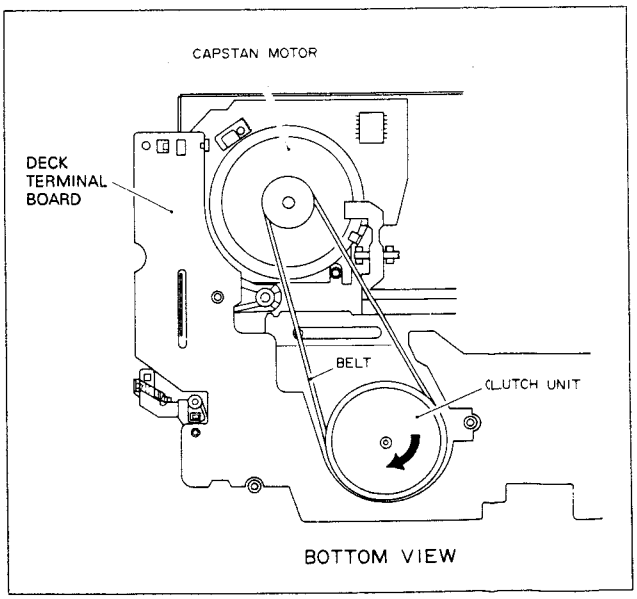


Fig. 2-1-2

4) Ture the mode motor further to where the cassette holder begins moving in the unloading direction, then remove the cassette tape.

Note: *Turn the mode motor and clutch unit alternately in order to avoid damaging the tape. It is important to avoid scratching the tape in the mechanism.*

2.1.4 Test equipment

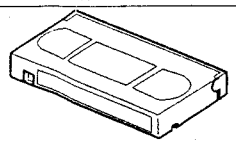
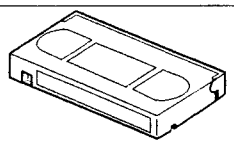
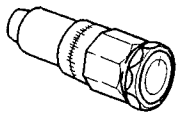
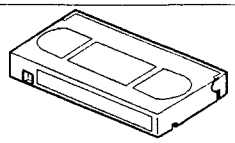
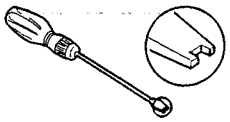
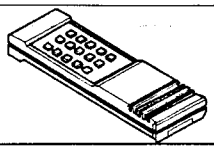
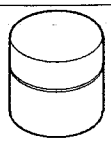
Alignment tape (SP) MH-2	Alignment tape (LP) MH-2L	Torque gauge PUJ48075-2	Back tension cassette gauge PUJ48076-2
			
A/C head positioning tool PTU94010	**Roller driver PTU94002**	**Presetting unit PTU94008**	**Grease PTU94014A**
			

Table 2-1-1

2.2 MAIN MECHANISM PARTS

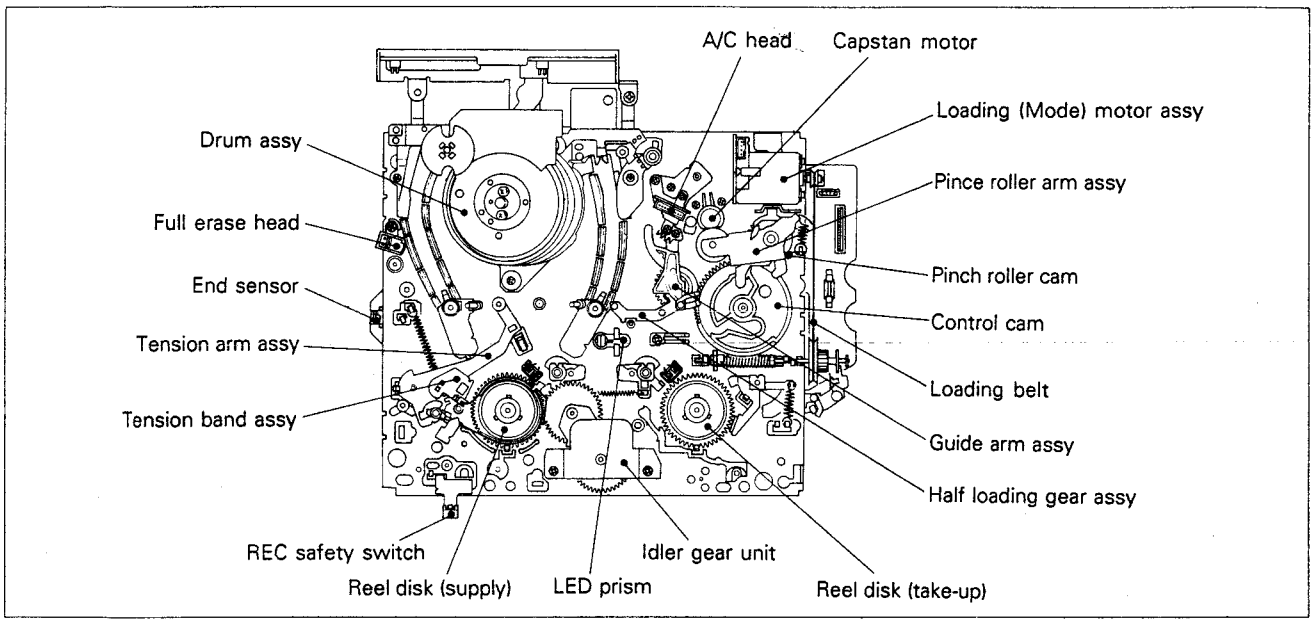


Fig. 2-2-1 Top view of main-deck

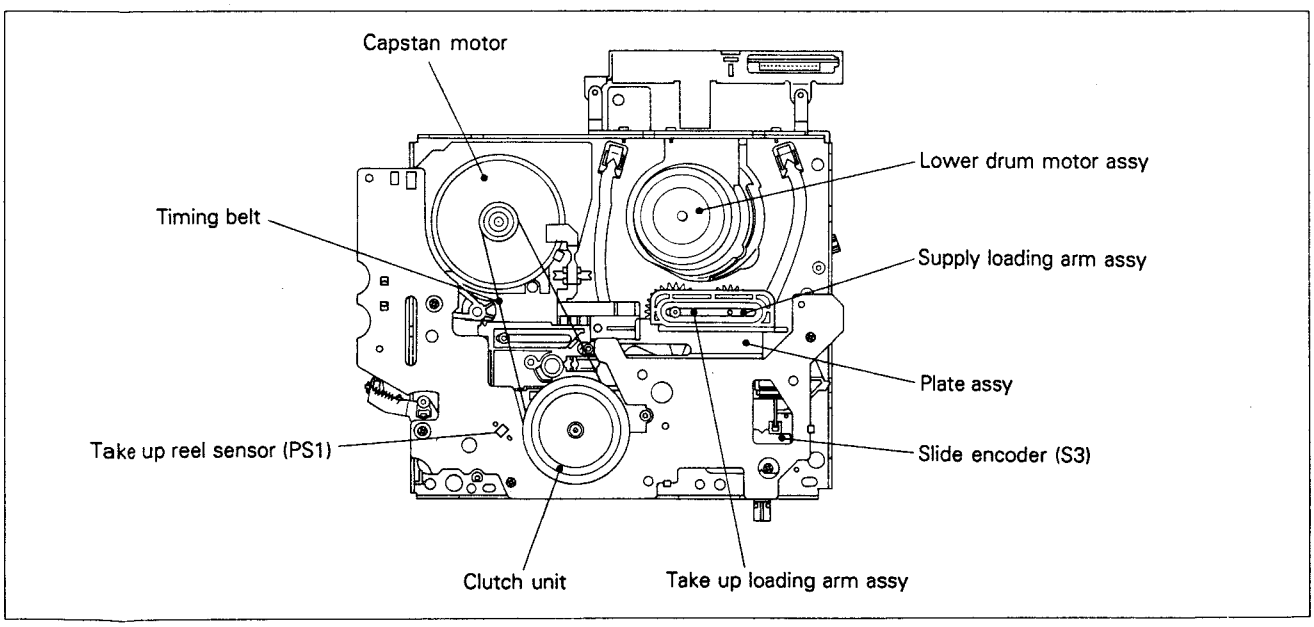


Fig. 2-2-2 Bottom view of main-deck

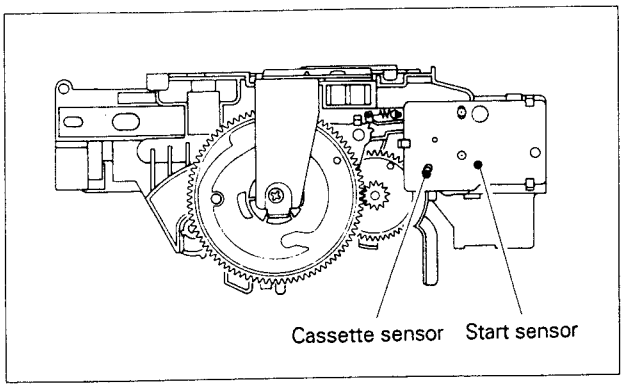


Fig. 2-2-3 Side view of cassette housing

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).
For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
Before oiling, clean with alcohol.
Apply one or two drops of oil.
Avoid excess oil.

1) Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 2-2-1

2) Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: ***Stir grease that has been stored for an extended period.***

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.
Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation hours						
		250	500	750	1000	1250	1500	2000
Tape Transport	Upper drum assy	★	★	★	○	★	○	○
	A/C head	★			○			○
	Pinch roller arm assy	★	★	★	★	★	★	★
	Full erase head							
	Tension arm assy							
	Lower drum assy							
	Capstan motor (Shaft)							
	Half loading gear assy							
	Guide arm assy							
Drive	Capstan motor							○
	Loading belt			○				○
	Mode motor assy			○				○
	Reel disk (Supply)			○				○
	Reel disk (Take-up)			○				○
	Clutch assy			○				○
	Worm clutch assy							○
	Plate assy							○
Others	Brush assy			○				○
	Tension band assy			○				○

★ : Cleaning
○ : Inspection or Replacement if necessary

Table 2-3-1

2.4 MAIN PARTS REPLACEMENT AND ADJUSTMENT

2.4.1 Stator assembly

1) Take out 1 screw (D), then remove the Earth Plate.
2) Take out 2 screws (A).
3) Raise the Stator Assembly in the direction indicated by the arrow to remove it (also remove the Inertia Roller).
4) Remove the flat cable.
5) To reinstall, first secure the flat cable, then insert 2 screws (A).
6) After reinstalling, be sure to perform switching point adjustment.

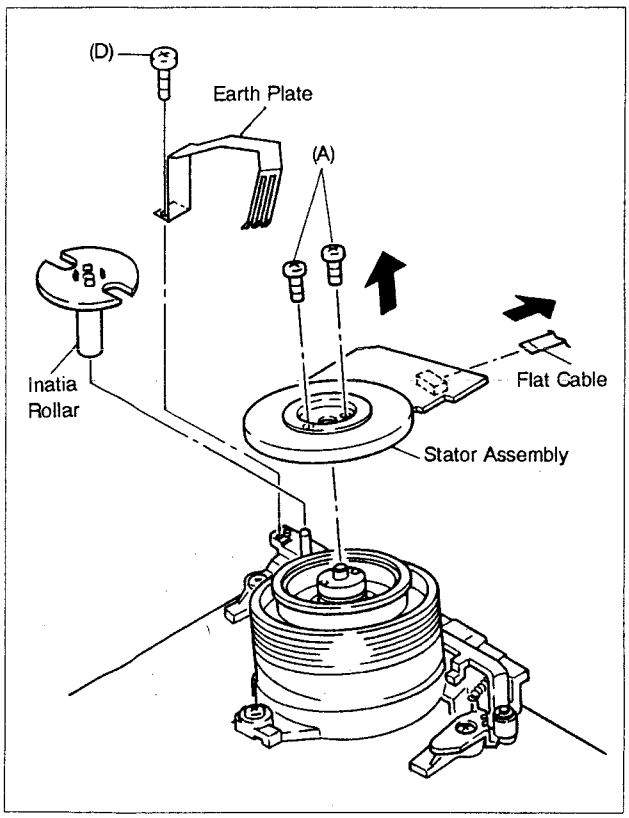


Fig. 2-4-1

2.4.2 Rotor assembly

1) Remove the Eart Plate and Stator Assembly.
2) Take out 2 screws (B) and remove the Rotor Assembly.

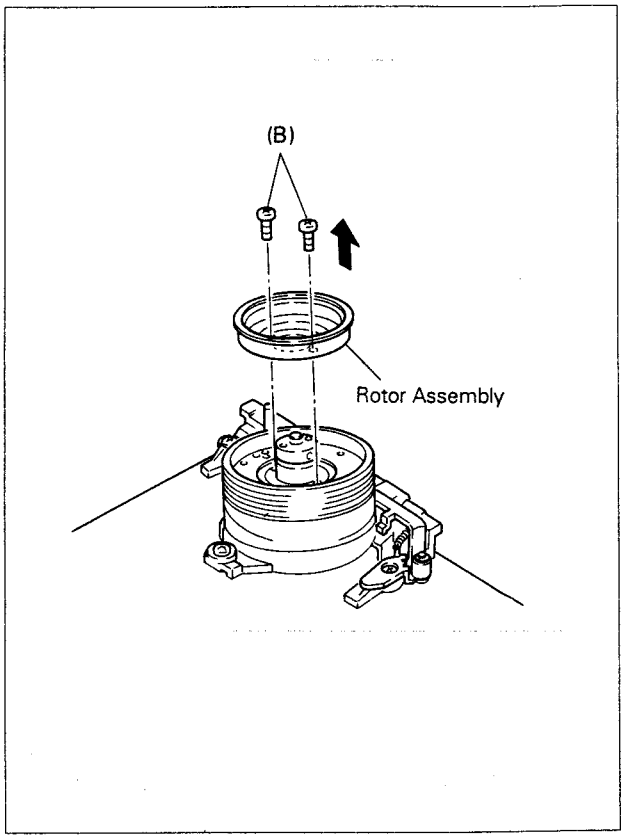


Fig. 2-4-2

Note: *A normal picture will not be obtained unless the phase is properly aligned when installing the Rotor Assembly. Also note there are three types of Rotors.*

3) Align the Upper Drum and Rotor Assembly phase as indicated in Fig. 2-4-3.
4) Overlap holes (a) of the Upper Drum with holes (b) of the Rotor Assembly (align holes in 3 locations) and secure with 2 screws (B) (see Fig. 2-4-2).

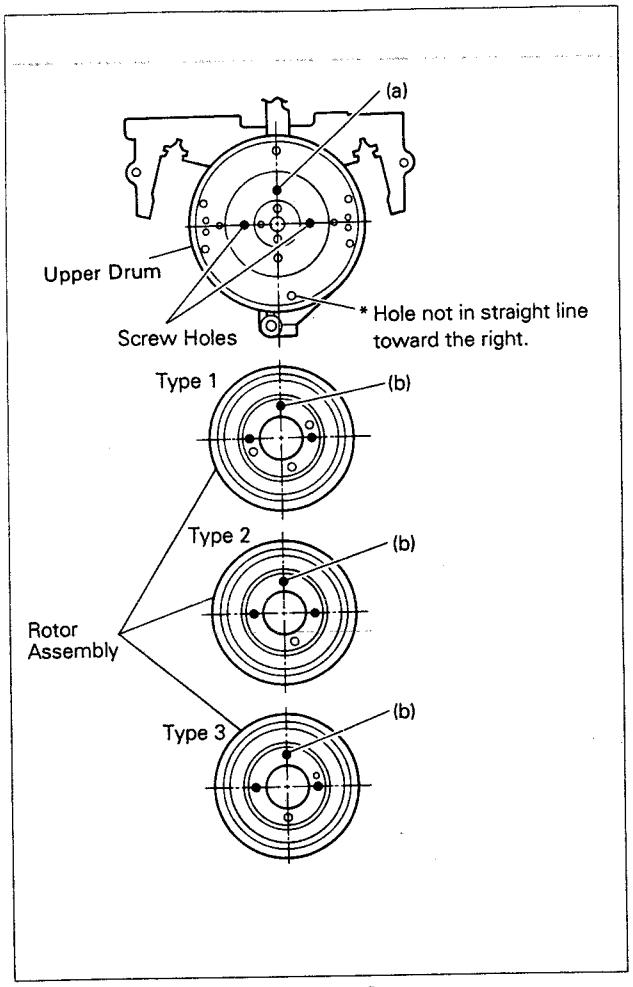


Fig. 2-4-3

2.4.3 Drum subassembly

1) Remove the Washer and Head Cleaner Assembly.
2) Disengage the PRE/REC AMP board connector and flat cable.
3) Take out 3 screws (C) and remove the Drum Subassembly.

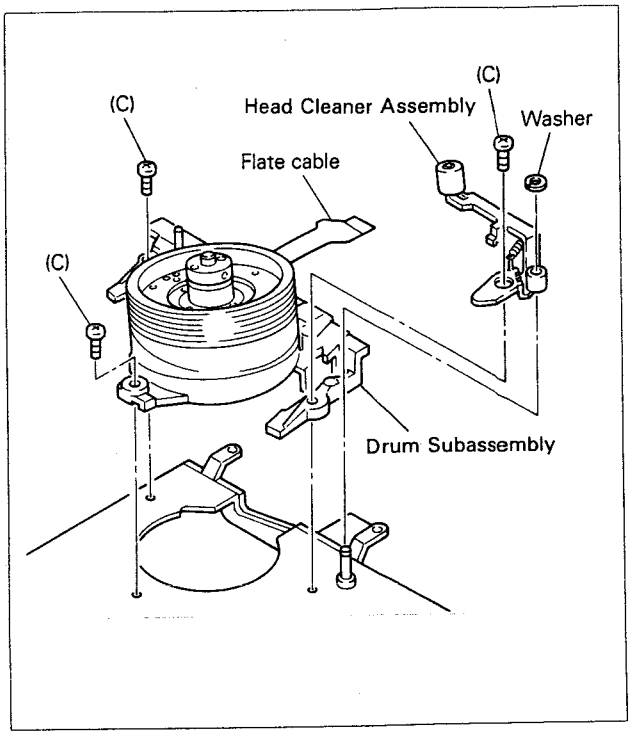


Fig. 2-4-4

2.4.4 Upper Drum assembly

1. Removal

1) Remove the Stator and Rotor Assemblies.
2) Use a 1.5 mm hexagonal wrench to loosen the Collar Assembly screw and remove the Collar Assembly.
3) Remove the Upper Drum Assembly and use tweezers to remove the Washer.

Note: *As grease is applied to the Brush, use care to avoid contamination by dirt or other foreign matter. If the Brush is replaced, use care regarding top and bottom direction and be sure to apply the specified grease (PTU94014A) to the contact sections (2 locations).*

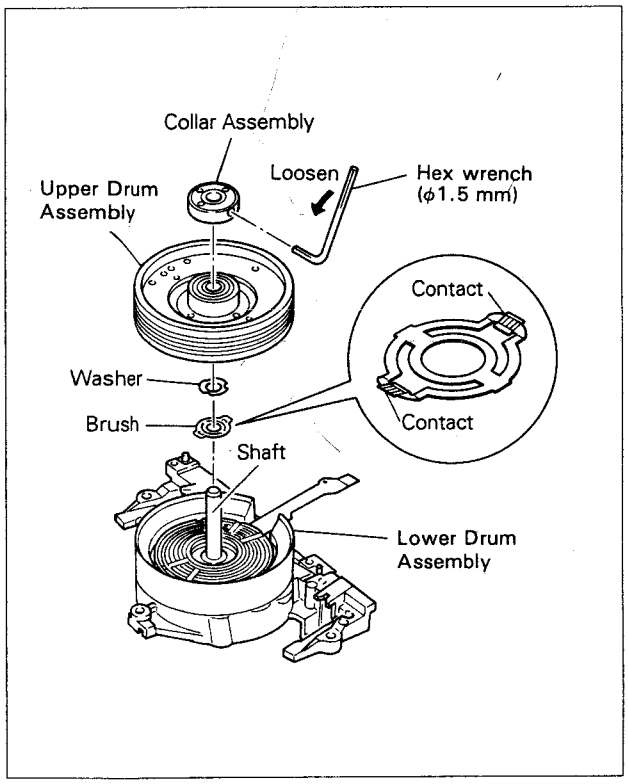


Fig. 2-4-5

2. Installation

1) Use an air brush to clean the Lower Drum Assembly and the coil section of the new Upper Drum Assembly.
2) Set a new Washer and Upper Drum Assembly on the Drum shaft (see Fig. 2-4-5).

Note: *Be sure to use the new Washer supplied with the replacement Upper Drum Assembly.*

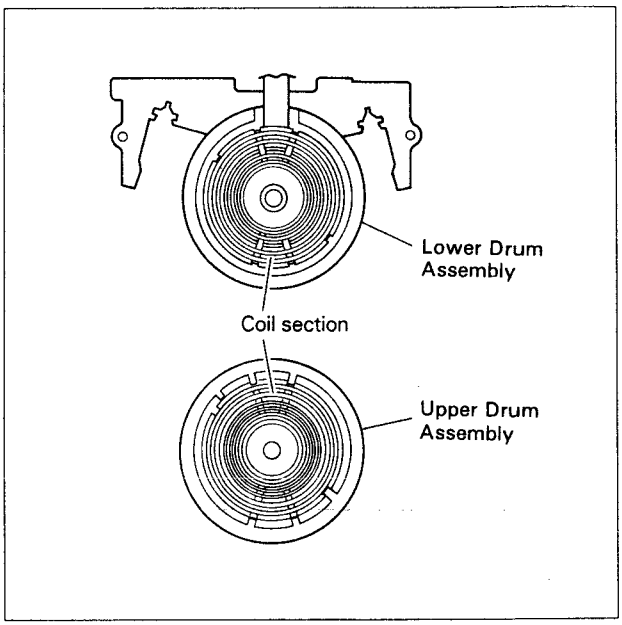


Fig. 2-4-6

3) Note the top and bottom of the Collar Assembly and determine the position as indicated in Fig. 2-4-7.

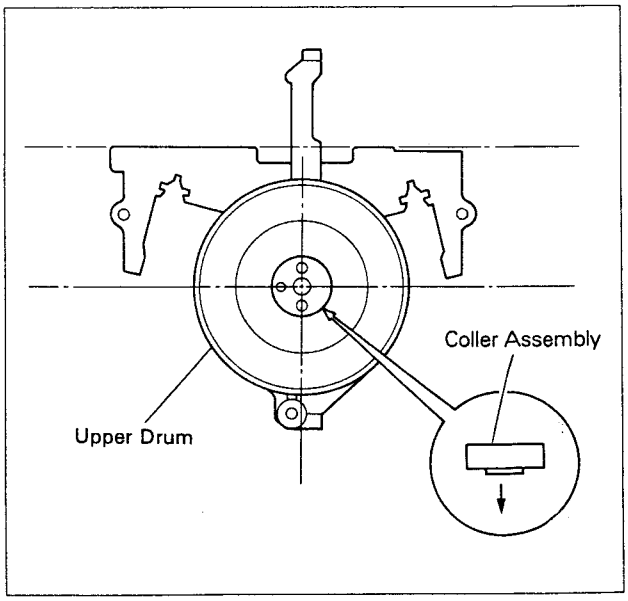


Fig. 2-4-7

4) While pressing the Collar Assembly evenly from above with the fingertips, secure the hexagonal screw.

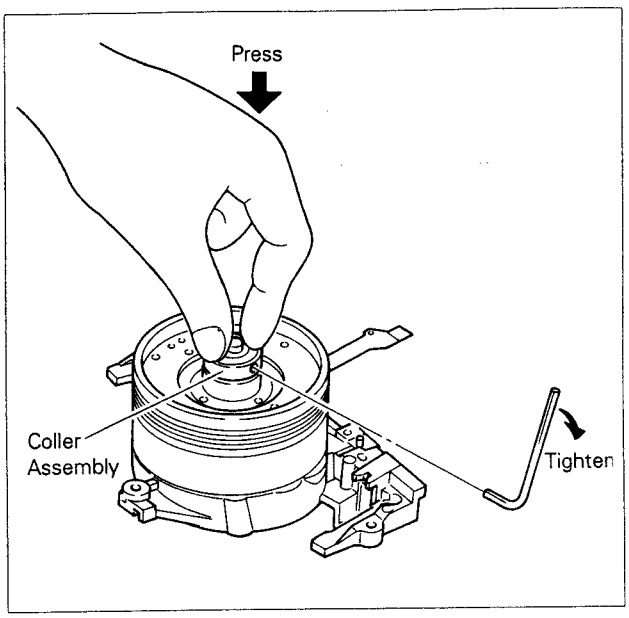


Fig. 2-4-8

5) After installing, gently turn the Upper Drum by hand and confirm normal rotation.
6) Install the Rotor and Stator Assemblies.
7) Clean the Upper and Lower Drum Assemblies and perform the following adjustments;

- Switching Point Adjustment
- Interchangeability Adjustment (be sure to check LP mode)
- Recording color level Adjustment

2.4.5 Tension arm positioning

1) Remove the cassette housing, set the playback mode.
(Refer to 2.1.2 Check without cassette housing)
2) Turn the eccentric adjust pin to position the mark of the chassis with the tension arm tip as shown Fig. 2-4-9.

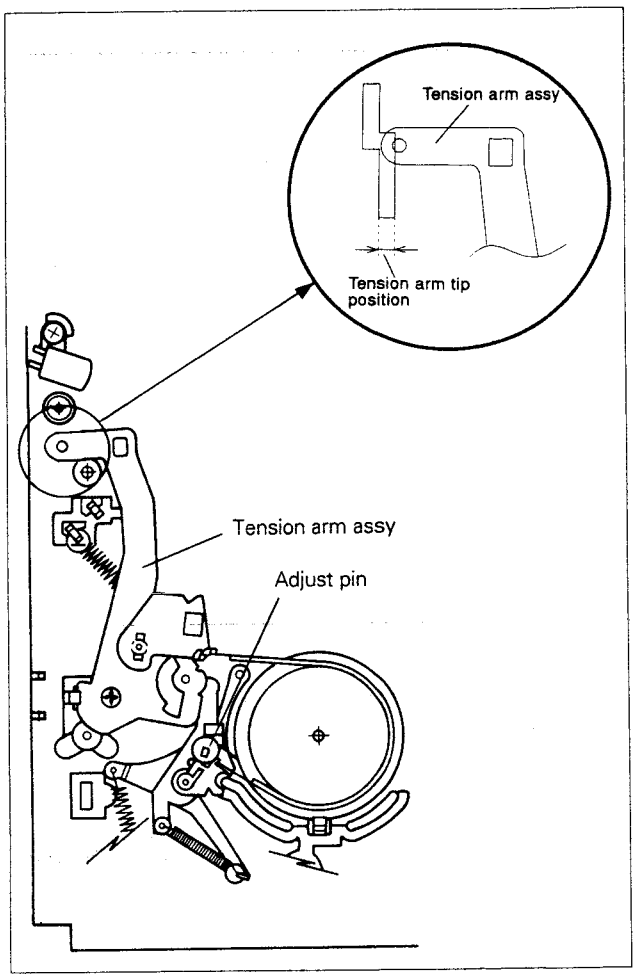


Fig. 2-4-9

Note: *Normally, if the tension post position is properly adjusted, the back tension will assume the correct value. Use the back tension cassette gauge and confirm playback tension is 35 g-cm to 48 g-cm (13.8 g-inch to 18.9 g-inch).*

2.4.6 Pinch roller cam position

1) Set the mechanism to the eject mode (cassette holder is locked in eject position).
2) Install the pinch roller cam so the largest hole near the gear teeth is aligned with the hole on the chassis.
3) Set the control cam on the deck with the hole in the groove aligned with the hole on the chassis. Observe that the small hole on the control cam and the mark on the pinch roller cam are aligned. (If the control cam does not fit readily, shift the loading arm and plate assembly within the range of mechanical play.)
4) Install the half-loading gear assembly with the hole aligned with the hole on the chassis. Secure with split washer.
5) Install the guide arm assembly with the hole aligned with hole on the chassis. Engage the spring properly.

Note: *This is the correct mechanical alignment to install the cassette housing. The cassette housing should also be in the eject position.*

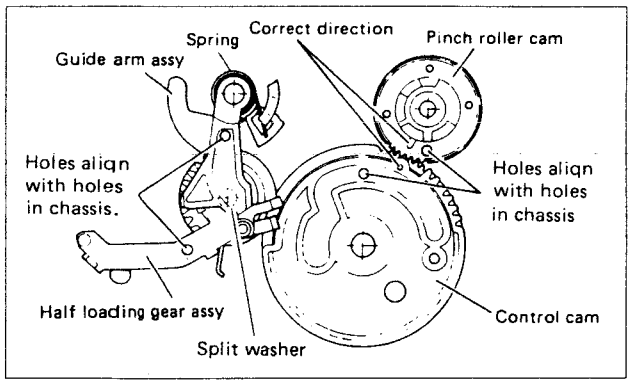


Fig. 2-4-10

2.4.7 Audio/control head height

1) Adjust the 3 screws (screw ①,②,③ in Fig. 2-5-1) to set the audio/control head height to 6.6 mm (0.26 in). Adjust all screws equally.
2) Perform interchangeability adjustments to obtain the specified control pulse and audio signal levels.

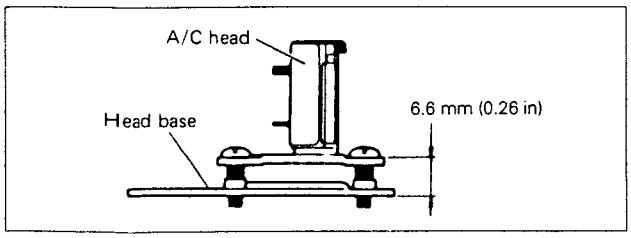


Fig. 2-4-11

Notes:
- *It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.*
- *Perform interchangeability adjustments after electrical adjustments.*

2.4.8 Loading arm and plate assembly position

1) Set for Eject mode and remove the deck terminal board.
2) Check that the preset hole of the plate assembly is in the preset position. Temporarily insert a 3 mm (0.12 in) screw to hold the position.
3) By hand, hold the loading arms in the unloading (inner) position and set the plate assembly from above.
4) Install Red and White split washers. Remove temporary screw.
5) Move the mode motor belt by hand and confirm mechanism operation.

Note: *Observe that the brake assembly pin is engaged with the plate assembly groove.*

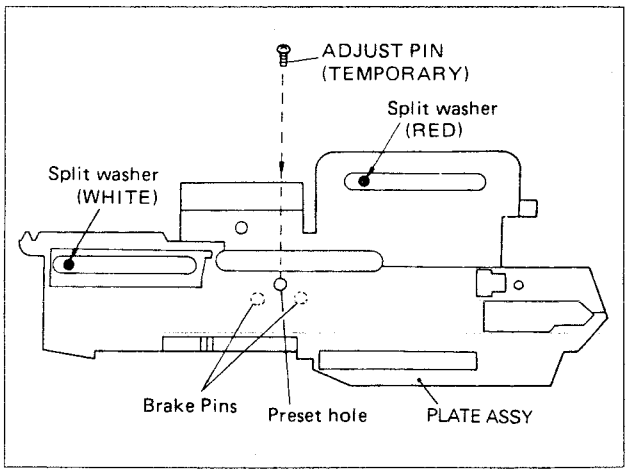


Fig. 2-4-12

2.4.9 Reel disk height

1) Measure the height of the reel disk above the main chassis.
2) Add or remove washers at the bottom of the reel disk to adjust for 12 mm (0.47 in). See Fig. 2-4-13.

Note: *This adjustment is normally not needed. Perform after replacing the reel disk.*

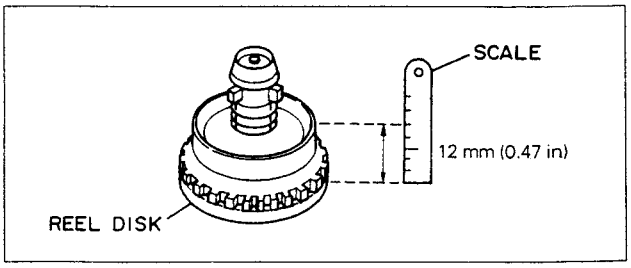


Fig. 2-4-13

2.5 TAPE INTERCHANGEABILITY ADJUSTMENT

Note: *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components (A/C head, drum assembly, etc.).*

2.5.1 Height and azimuth adjustment of A/C head

1) Connect the oscilloscope to the audio output jack on the rear of the deck.
2) Play back the stairstep portion (6 kHz, Mono) of the alignment tape.
3) Adjust Black Screw ② on the head base in Fig. 2-5-1 so that the output level is at a maximum.
4) Readjust Screw ① shown in Fig. 2-5-1 for maximum output.

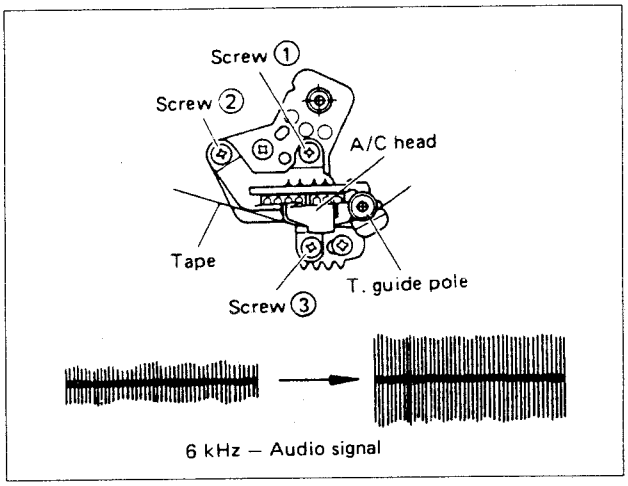


Fig. 2-5-1

2.5.2 Horizontal Position adjustment of A/C head

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the RF envelope appears, as in Fig. 2-5-4.
3) Set the neutral manual tracking position, by simultaneously press of the (+) and (–) tracking buttons.
4) If adjustment is required, slightly loosen screws ④ and ⑤. Set A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 2-5-2.
5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the durm and stop at the position of maximum FM waveform output level as shown in Fig. 2-5-4.
6) Tighten screw ⑤. Remove the tool and tighten screw ④.
7) Eject the tape and then re-insert again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (+) button (count the number of pushes) until the maximum RF envelope is reduced to 1/2. Eject the tape and re-insert it again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (–) button (count the number of pushes) until the maximum RF envelope is reduced to 1/2.
8) Confirm that the number of pushes are equal.

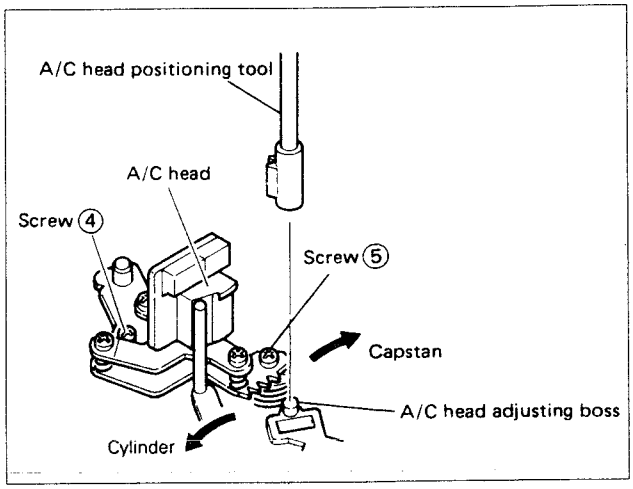


Fig. 2-5-2

2.5.3 Playback tracking

This is the most important adjustment. If incorrect, proper tracking will not be obtained in recording and playback.
Other problems that may occur are noise in parts of the picture, poor colour reproduction and picture instability.

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the RF envelope appears, as in Fig. 2-5-4.
3) Operate the tracking adjustment (press the tracking buttons during playback) and set for maximum playback RF envelope waveform.
4) If adjustment is required, first slightly loosen the set screw located at the bottom of the guide rollers. Using the guide roller adjustment tool, adjust the supply and take-up guide rollers (refer to Fig. 2-5-3) to obtain the correct waveform. Refer to Fig. 2-5-5.

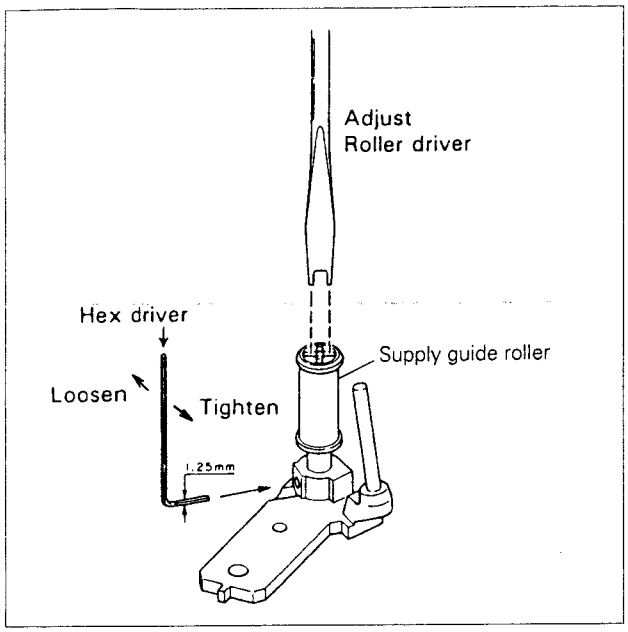


Fig. 2-5-3

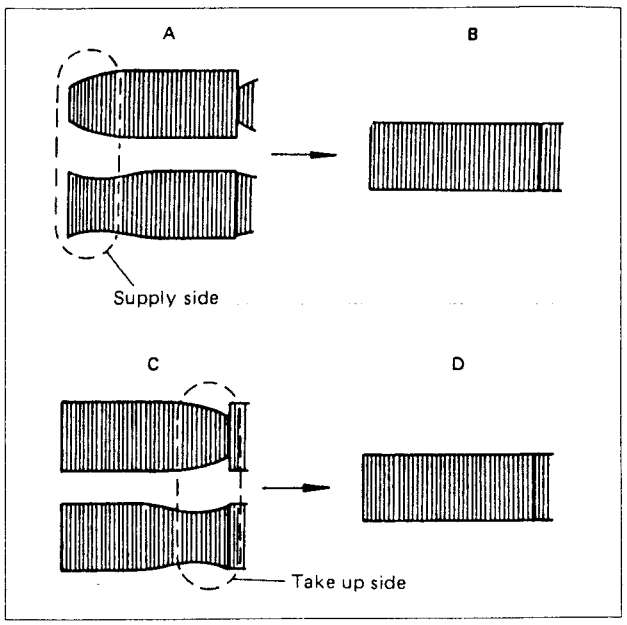


Fig. 2-5-5

5) By pushing the tracking buttons several times, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the variation proceeds in a flat shape, as in Fig. 2-5-6.
6) If the FM waveform varies and is not mostly flat, tweak the height of guide roller(s) until the RF waveform is as flat as possible.
7) Eject a tape and then playback tape again, since the height of guide rollers may move during adjustment. Confirm, when pushing the tracking (+) and (–) buttons, FM waveform variation is always flat.
8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits, as in Fig. 2-5-7.
9) Perform step 2.5.1 and 2.5.2.

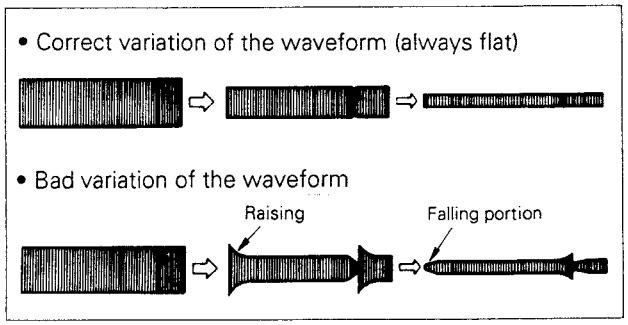


Fig. 2-5-6

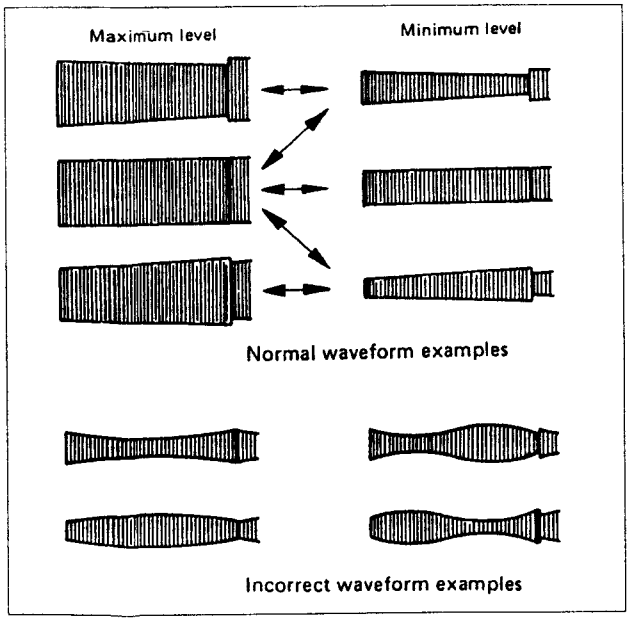


Fig. 2-5-4

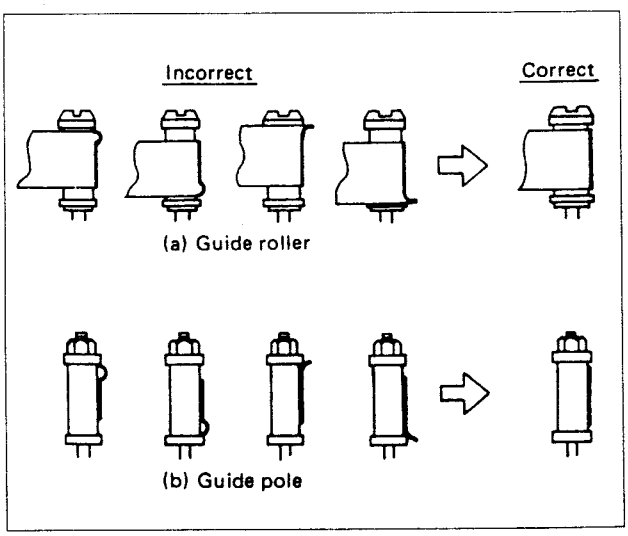


Fig. 2-5-7

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 DECK SECTION ADJUSTMENT

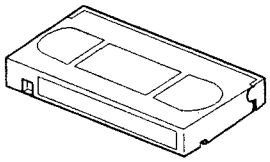
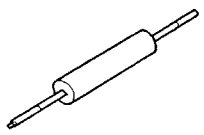
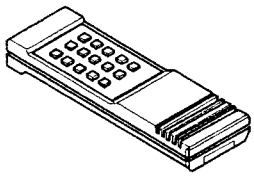
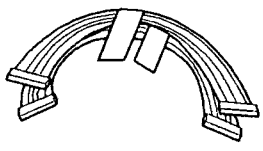
3.1.1 PRECAUTION

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipments is available.

1. Required test equipment

1. Colour television or monitor.
2. Osciloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Digital voltmeter
5. Signal generator: RF/IF sweep/maker
6. Signal generator:NTSC/ PAL/SECAM colour bar, stairstep
7. Recording tape

2. Required adjustment tools

Alignment tape (SP) MH-2	Adjustment driver YTU93004-2
	
Presetting unit PTU94008	*SMC replacement tools YTU94038C
	
Patch cords set PTU93005B	
	

Note:** ***It is convenient for replacing chip parts.

3. Colour bar signal and pattern

- SECAM colour bar signal waveform

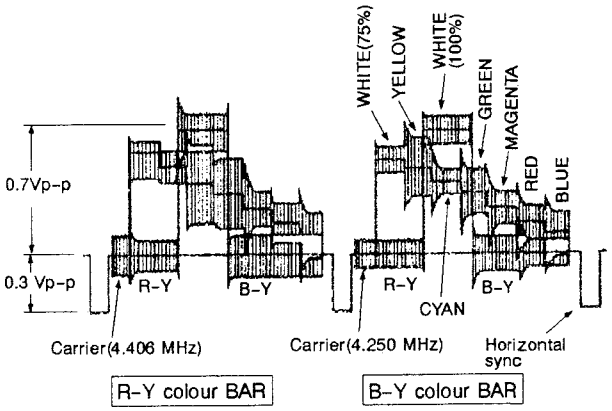


Fig. 3-1-1 SECAM colour bar signal waveform

- SECAM colour bar pattern

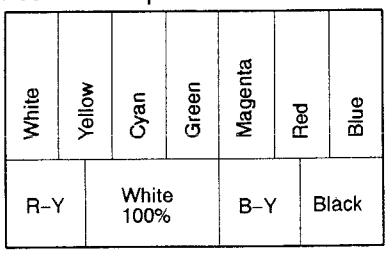


Fig. 3-1-2 SECAM colour bar pattern

- PAL colour bar signal waveform

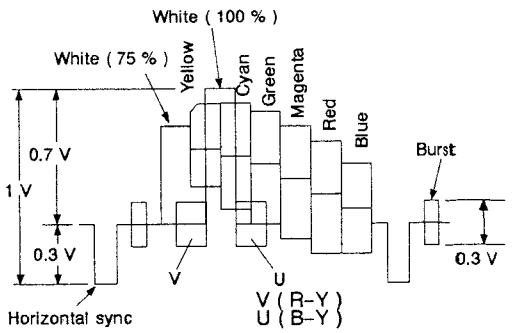


Fig. 3-1-3 PAL Colour bar signal waveform

- PAL colour bar pattern

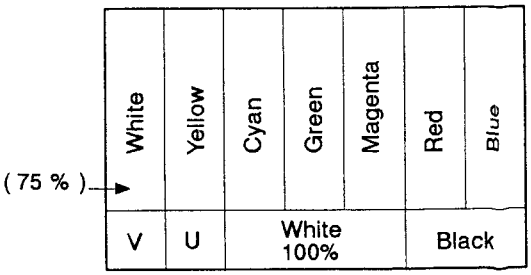


Fig. 3-1-4 PAL colour bar pattern

● NTSC colour bar signal waveform

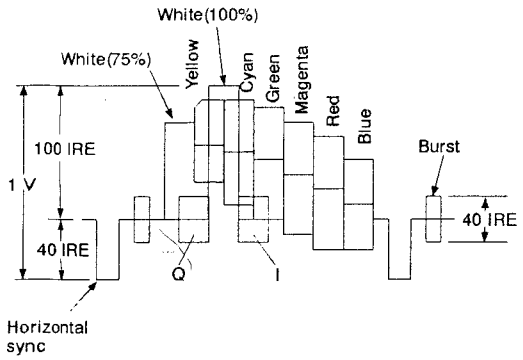


Fig. 3-1-5 NTSC Colour bar signal waveform

● NTSC colour bar pattern

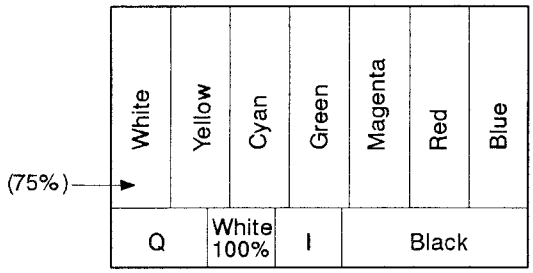


Fig. 3-1-6 NTSC colour bar pattern

3.1.2 SERVO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. PB switching point

Signal	•Alignment tape (MH-2) •Stairstep
Mode	•PB •Digital tracking OFF
Equipment	•Oscilloscope
Measurement point	•CN3 pin 10 (VIDEO OUT) 〔VIDEO UNIT BOARD〕
Trigger slope (–)	•TP411 (DRUM FF)
Adjustment tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Use only buttons "E" and "F". Deplessing other buttons during adjustment may cause adjustment errors.*

1) Connect an oscilloscope to CN3 pin 10 and TP411.
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the center position by simultaneously pressing the (+) and (–) buttons.
4) Adjust by pressing "F" (+) or "E" (–) buttons of presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

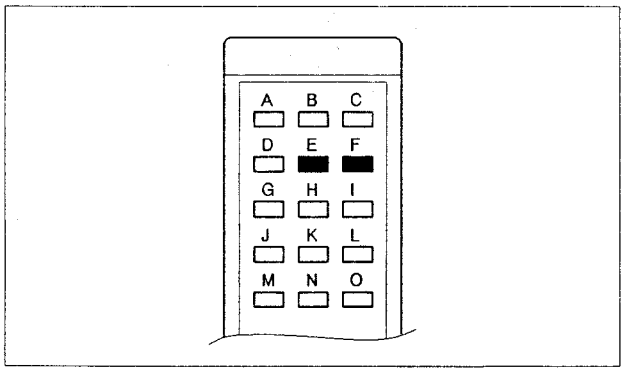


Fig. 3-1-7 Presetting unit

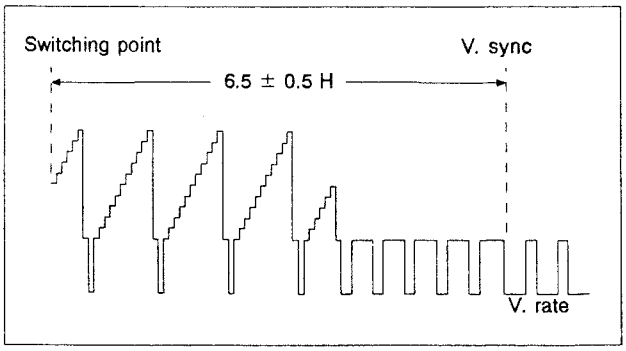


Fig. 3-1-8 PB switching point

2. Slow tracking preset-1

Signal	•PAL colour bar
Mode	•SP/LP •REC → PB (SLOW) •Digital tracking OFF
Equipment	•TV-Monitor
Adjustment tool	•Presetting unit [PTU94008]
Specification	•Mimimum noise

Note: *Set VCR to the mode A by remote controller.*

1) Record a PAL colour bar signal in the SP mode.
2) Playback recorded signal on the FWD slow mode.
3) Set the tracking control to the centre position by simultaneously pressing the (+) and (–) buttons.
4) Observe the display on a TV monitor and adjust for optimum noise condition (best tracking) by depressing "B" (+) or "C" (–) buttons of presetting unit as required.
5) Depress the STOP button.
6) Confirm that the bar noise is not visible on the monitor in the slow mode.
7) Repeat steps 1) to 7) in LP mode.

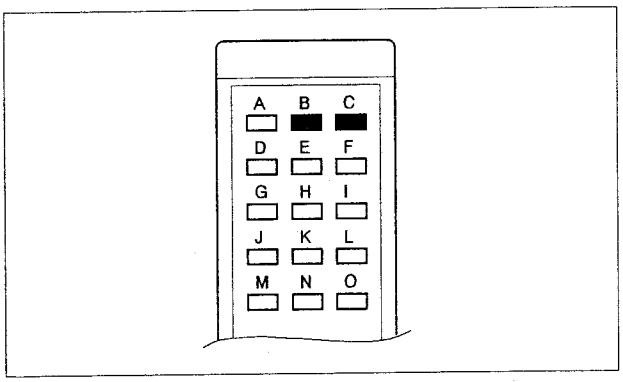


Fig. 3-1-9 Presetting unit-1

3. Slow tracking preset-2

Signal	•NTSC colour bar
Mode	•SP/EP •REC → PB (SLOW) •Digital tracking OFF
Equipment	•TV-Monitor
Adjustment tool	•Presetting unit [PTU94008]
Specification	•Mimimum noise

Note: *Set VCR to the mode A by remote controller.*

1) Record a NTSC colour bar signal in the SP mode.
2) Playback recorded signal on the FWD slow mode.
3) Set the tracking control to the centre position by simultaneously pressing the (+) and (–) buttons.
4) Observe the display on a TV monitor and adjust for optimum noise condition (best tracking) by depressing "B" (+) or "C" (–) buttons of presetting unit as required.
5) Depress the STOP button.
6) Confirm that the bar noise is not visible on the monitor in the slow mode.
7) Repeat steps 1) to 7) in EP mode.

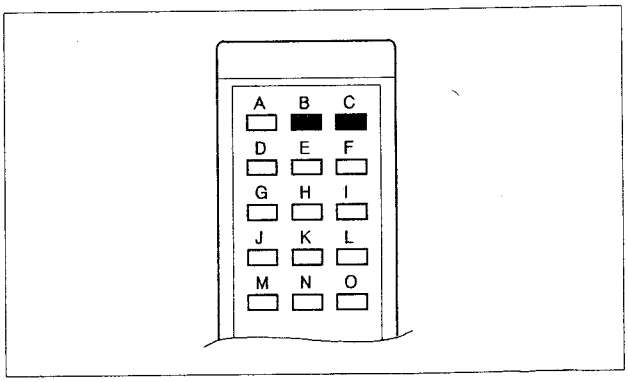


Fig. 3-1-10 Presetting unit-2

3.1.3 VIDEO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the VIDEO UNIT BOARD.*

Important:

Item 1. thru 6..

1) Ordinarily performing these adjustments is not required. Adjustments should be performed only if IC2 on the VIDEO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. EE Y level

Signal	•PAL colour bar •NTSC colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•CN3 pin 10 (VIDEO OUT)
Adjustment part	•R42 (EE Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

1) Connect an oscilloscope to CN3 pin 10.
2) Supply a PAL colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p. Unterminated.
4) If necessary, replace R42 with the variable chip resistor NVP1301-153N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-11.
5) Supply a NTSC colour bar signal, and repeat steps 3) and 4).

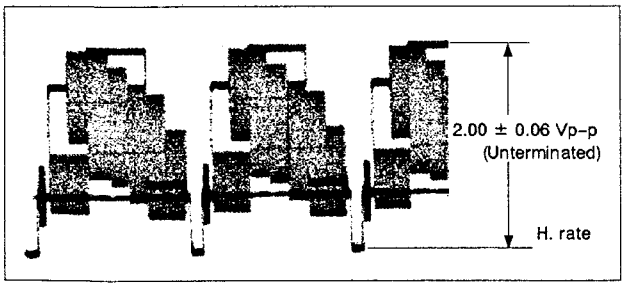


Fig. 3-1-11 EE Y level

2. White clip

Signal	•PAL colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•IC2 pin 22
Adjustment part	•R45 (W/D CLIP)
Specification	•WHITE CLIP : 190 ± 4 % •DARK CLIP : 145 ± 8 %

1) Connect an oscilloscope to IC2 pin 22.
2) Confirm that white clip is 190 ± 4 % and dark clip is 145 ± 8 %.
3) If necessary, replace R45 with the variable chip resistor NVP1301-103N and adjust it 190 ± 4 % white clip and 145 ± 8 % dark clip, as in Fig. 3-1-12.

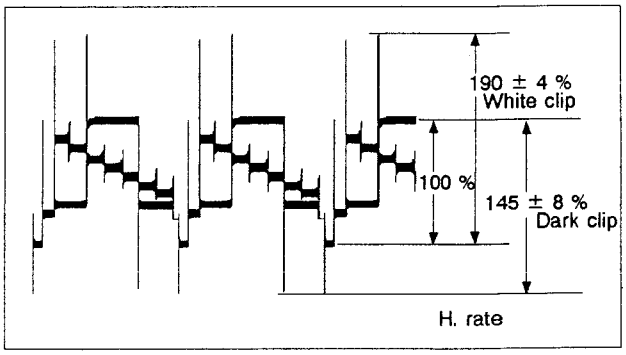


Fig. 3-1-12 White clip

3. Carrier & deviation

· Carrier

Signal	•No signal-VIDEO INPUT (Shorted RCA Phono Plug)
Mode	•EE
Equipment	•Frequency counter
Measurement point	•CN2 pin 5 (REC FM)
Adjustment part	•R28 (CARRIER)
Specification	•3.80 MHz ± 40 kHz

1) Connect a frequency counter to CN2 pin 5.
2) Confirm that frequency is 3.80 MHz ± 40 kHz.
3) If necessary, replace R28 with the variable chip resistor NVP1301-223N and adjust it for 3.80 MHz ± 40 kHz.

· Deviation

Signal	·PAL colour bar
Mode	·REC then PB
Equipment	·Oscilloscope
Measurement point	·CN3 pin 10 (VIDEO OUT)
Adjustment part	·R29 (DEVIATION)
Specification	·2.00 ± 0.06 Vp-p (Unterminated)

4) Record and playback a PAL colour bar signal.
5) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
6) If necessary, replace R29 with the variable chip resistor NVP1301-103N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-13.

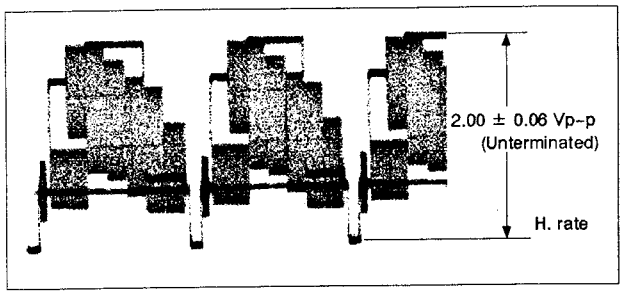


Fig. 3-1-13 Carrier & deviation

4. YNR level

Signal	·PAL colour bar
Mode	·EE
Equipment	·Oscilloscope
Measurement point	·IC2 pin 9
Adjustment part	·R18 (N.C. BALANCE)
Specification	·Mimimum DC step difference

1) Connect an oscilloscope to IC2 pin 9.
2) Confirm that DC step difference is minimum.
3) If necessary, replace R18 with the variable resistor NVP1301-152NZ and adjust it for minimum DC step difference, as in Fig. 3-1-14.

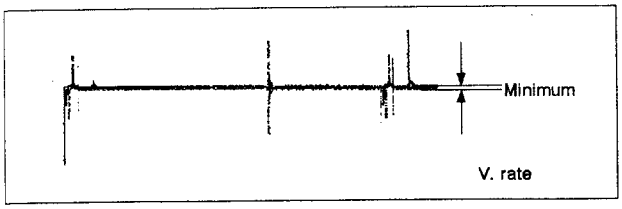


Fig. 3-1-14 YNR level

5. PB Y level

Signal	·PAL colour bar
Mode	·SP ·REC then PB
Equipment	·Oscilloscope
Measurement point	·CN3 pin 10 (VIDEO OUT)
Adjustment part	·R25 (PB Y LEVEL)
Specification	·2.00 ± 0.06 Vp-p (Unterminated)

Note: ***Confirm that procedure 3.1.4-2. is correct before performing this adjustment procedure.***

1) Connect an oscilloscope to CN3 pin 10.
2) Record and playbck a PAL colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
4) If necessary, replace R25 with the variable resistor NVP1301-472N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-15.

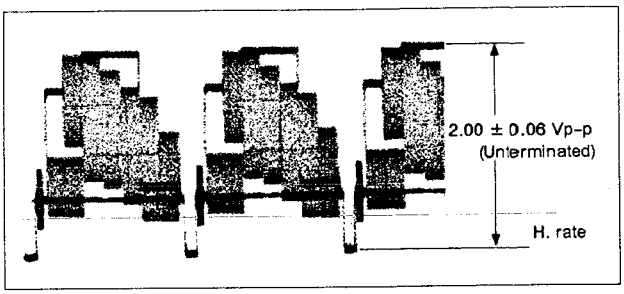


Fig. 3-1-15 PB Y level

6. REC colour level

Signal	·PAL colour bar
Mode	·SP ·REC
Equipment	·Oscilloscope
Measurement point	·CN2 pin 11 (REC COLOUR)
Adjustment part	·R52 (REC COLOUR LEVEL)
Specification	·200 ± 10 mVp-p

1) Connect an oscilloscope to CN2 pin 11.
2) Record the PAL colour bar signal in SP mode.
3) Confirm that colour level is 200 ± 10 mV p-p, as in Fig. 3-1-16.
4) If necessary, replace R52 with the variable resistor NVP1301-222N and adjust it for 200 ± 10 mVp-p.

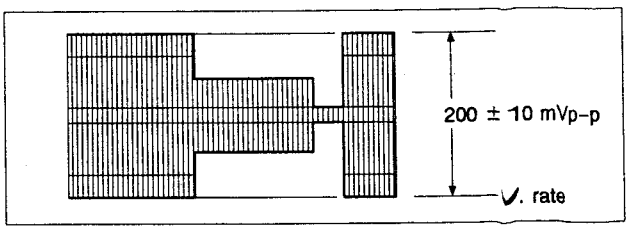


Fig. 3-1-16 REC colour level

7. MESECAM detect

Signal	•SECAM colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•TP244 (MESECAM DETECT) [MAIN BOARD]
Adjustment part	•L202 (MESECAM DETECT) [MAIN BOARD]
Specification	•A:B = 3:4

1) Connect an oscilloscope to TP244.
2) Adjust L202 so that A and B are related as follows : A:B = 3:4.

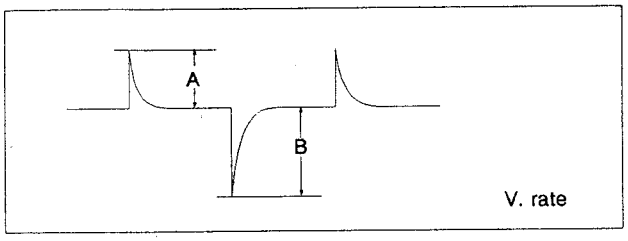


Fig. 3-1-17 MESECAM detect

3.1.4 TIMER CIRUCIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. Timer clock

Signal	•No signal
Mode	•EE •AUX
Equipment	•Frequency counter
Measurement point	•IC601 pin 64
Adjustment part	•C614 (TIMER CLOCK)
Specification	•1024.005 ± 0.001 Hz (976.5577 ± 0.0010 µsec)

1) Connect a frequency counter to IC601 pin 64 and GND.
2) Short IC601 pin 21 to IC601 pin 63.
3) Short the lead's capacitor C616 once in order to reset IC601.
4) Adjust C614 for 1024.005 ± 0.001 Hz (976.5577 ± 0.0010 µsec).
5) Disconnect a short wire.

3.1.5 TUNER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the TUNER IF BOARD.*

Equipment required

1. IF sweep signal generator (with suitable markers, PIF, SIF, etc.)
2. Sweep signal supply cable (See Fig. 3-1-20)

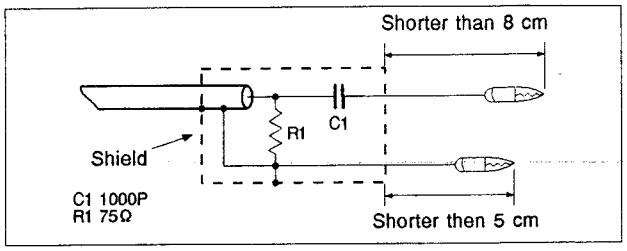


Fig. 3-1-20 Sweeper probe

1. VCO

〈Factory Method〉

Signal	•Sweep generator output
Mode	•Tuner (without antenna input Signal)
Equipment	•Oscilloscope •IF sweep signal generator
Sweeper probe	•Sweep signal supply cable
Measurement point	•IC1 pin 17
Adjustment part	•T3 (VCO)
Specification	•38.0 MHz (no distorton)

1) Use a sweeper probe as shown in Fig. 3-1-20 and connect the sweep generator output to pin 8 of IC1.
2) Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope.
3) Connect an oscilloscope to pin 17 of IC1 (VIDEO DET OUT) and adjust T3 to align the waveform with the frequency marker as shown in Fig. 3-1-21.

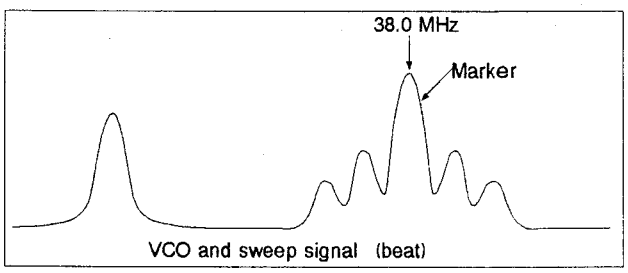


Fig. 3-1-21 VCO

《Alternate Method》

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Monitor-TV
Other condition	•Same as Factory Method
Specification	•Fine picture

1) Receive a colour broadcasting on a VHF channel.
2) Adjust T3 to obtain a fine picture on the monitor.

Note: *Before the following adjustments;*

1) Connect a cable to ANT IN and terminate TV OUT with 75 ohms.

2) Set a TV channel signal generator as follows.

Video: 65 dBμ 75 Ω, colour bar 87.5 % modulation.

Audio: 55 dBμ 75 Ω, 1 kHz ± 50 kHz deviation.

2. RF AGC

〈Factory Method〉

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Oscilloscope •TV signal generator
Measurement point	•IF terminal of front end
Adjustment part	•R30 (RF AGC)
Specification	• -7 ± 0.5 dB from maximum level (with minimum noise)

1) Connect an oscilloscope to IF terminal of U/V Tuner (front end) .

2) Adjust R30 for maximum level, then adjust R30 to reduce the -7.0 dB from maximum level.

《Alternate Method》

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•TV-monitor
Other condition	•Same as Factory Method
Specification	•Noise just disappears

Note: *Adjust R30 (RF AGC) to correct for excess noise in the picture or when streaks cross interference occurs due to strong electrical fields.*

1) Adjust R30 to minimize noise or streaks on the TV screen.

2) Adjust for noisy picture with strong signal. Then adjust until noise just disappears. Select other channels to confirm proper pick-up of channels.

3. SOUND DET.

〈Factory Method〉

Signal	•TV broadcasting
Mode	•Tuner •AFC NORM by MENU
Equipment	•Distortion meter
Measurement point	•CN2 pin 9
Adjustment part	•T1 (FM DET)
Specification	•Minimum distortion

1) Use a adjustment circuit as shown in Fig.3-1-22 and with AFC mode to NORM.

2) Connect the distortion meter to pin 9 of CN2 and observe audio signal.

3) Adjust T1 so that the distortion becomes minimum (less than 1.5 %).

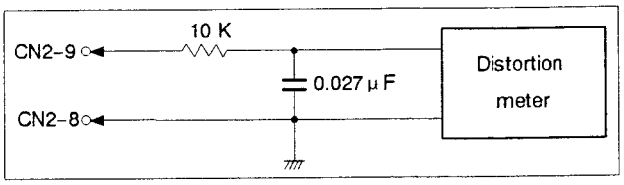


Fig. 3-1-22 Adjustment circuit

《Alternate Method》

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Oscilloscope
Other condition	•Same as Factory Method
Specification	•Maximum level

1) Receive a colour broadcasting on a VHF channel , and connect an oscilloscope to pin 9 of CN2.

2) Adjust T1 for maximum level at audio sound.

4. AFC

Signal	•TV broadcast
Mode	•Tuner •AFC NORM by MENU
Equipment	•Oscilloscope
Measurement point	•CN1 pin 14
Adjustment part	•T2 (AFC)
Specification	•2.0 ± 0.2 V DC

1) Receive a colour broadcast.

2) With AFC mode to NORM connect an oscilloscope to pin 14 of CN1.

3) Set the oscilloscope to DC mode and adjust T2 to set the lower edge of the ripple waveform to 2.0 V DC.

SECTION 4
CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

Safety precautions

The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

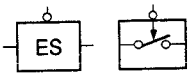
1. Schematic diagram values

Unless otherwise specified.

1) All resistance values are in ohms. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values in μH, (m: mH).
4) All diodes are 1SS133 or MA165, (refer to parts list).

2. Indications

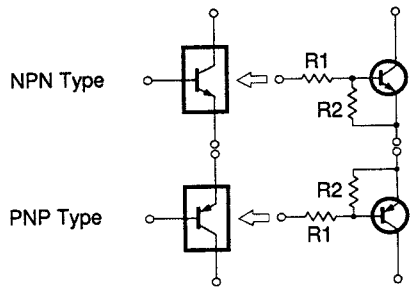
AUX : Active only at high.
$\overline{\text{AUX}}$: Active only at low.



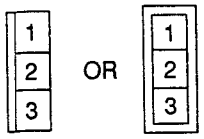
Active only at low for electronic switch.

Active only at high for electronic switch.

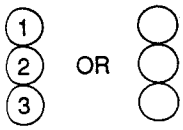
Digital transistor :
The digital transistor includes built in resistors.
It features small size and high reliability.



3. Interpreting Connector indications



Removable connector



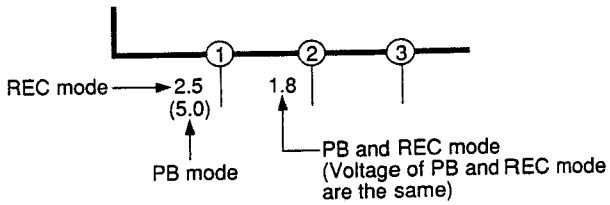
Direct connection on board

Non-removable Board connector

Connected pattern on board

4. Voltage measurement

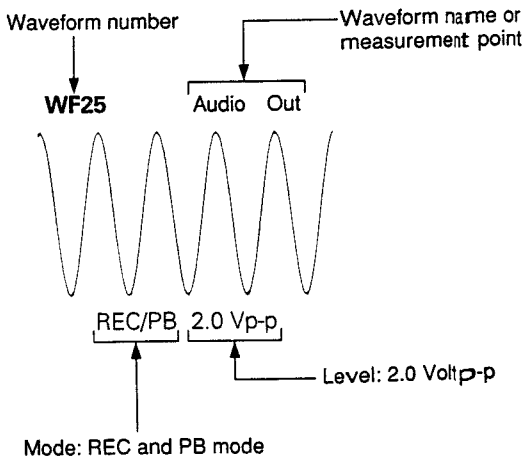
1) Voltage chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured as the grey scale pattern and color bar pattern which lighted up brightly is shot in the E-E mode.
4) Schematic diagram
   Voltage Indications for REC and PB mode on Schematic are as shown below.



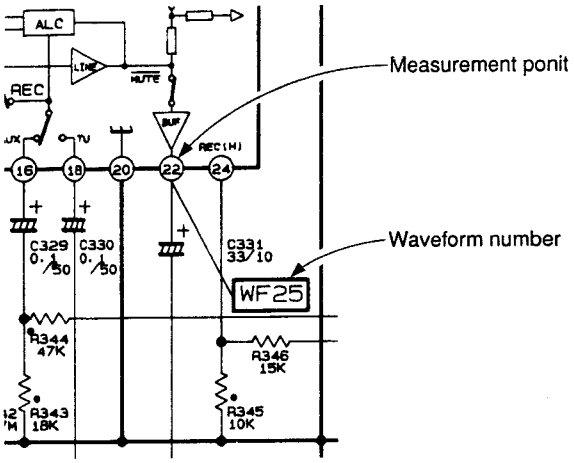
5. Waveform measurement

1) Waveform chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
2) Audio Section
   REC : 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured as the grey scale or color bar pattern which lighted up brightly is shot in the E-E mode.

Example:



4) Schematic diagram
Waveform indications on schematic are as shown below.



6. Signal path Symbols

The arrows indicate the signal path as follows.

- Playback signal path
- Playback and recording signal path
- Recording signal path (including E-E signal path)
- Y signal path
- Color (Chroma) signal path
- R or R-Y signal path
- B or B-Y signal path
- Capstan servo path
- Drum servo path
- Reel servo path

CIRCUIT BOARD NOTES

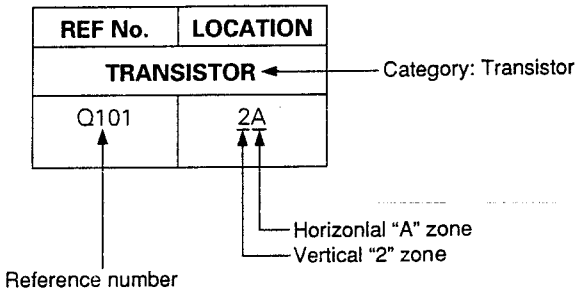
1. Color indications

1) Foil side :
Foil side patterns are indicated at gray shading.
2) Component side :
Component side patterns are indicated at RED shading.

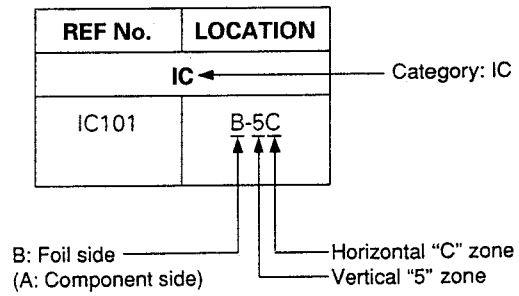
Notes:
Foil side (B side) ;
Parts on the foil side seen from foil face (pattern face) are indicated.
Component side (A side) ;
Parts on the component side seen from component face (parts face) are indicated.

2. Location of SMC indications

1) Single pattern :



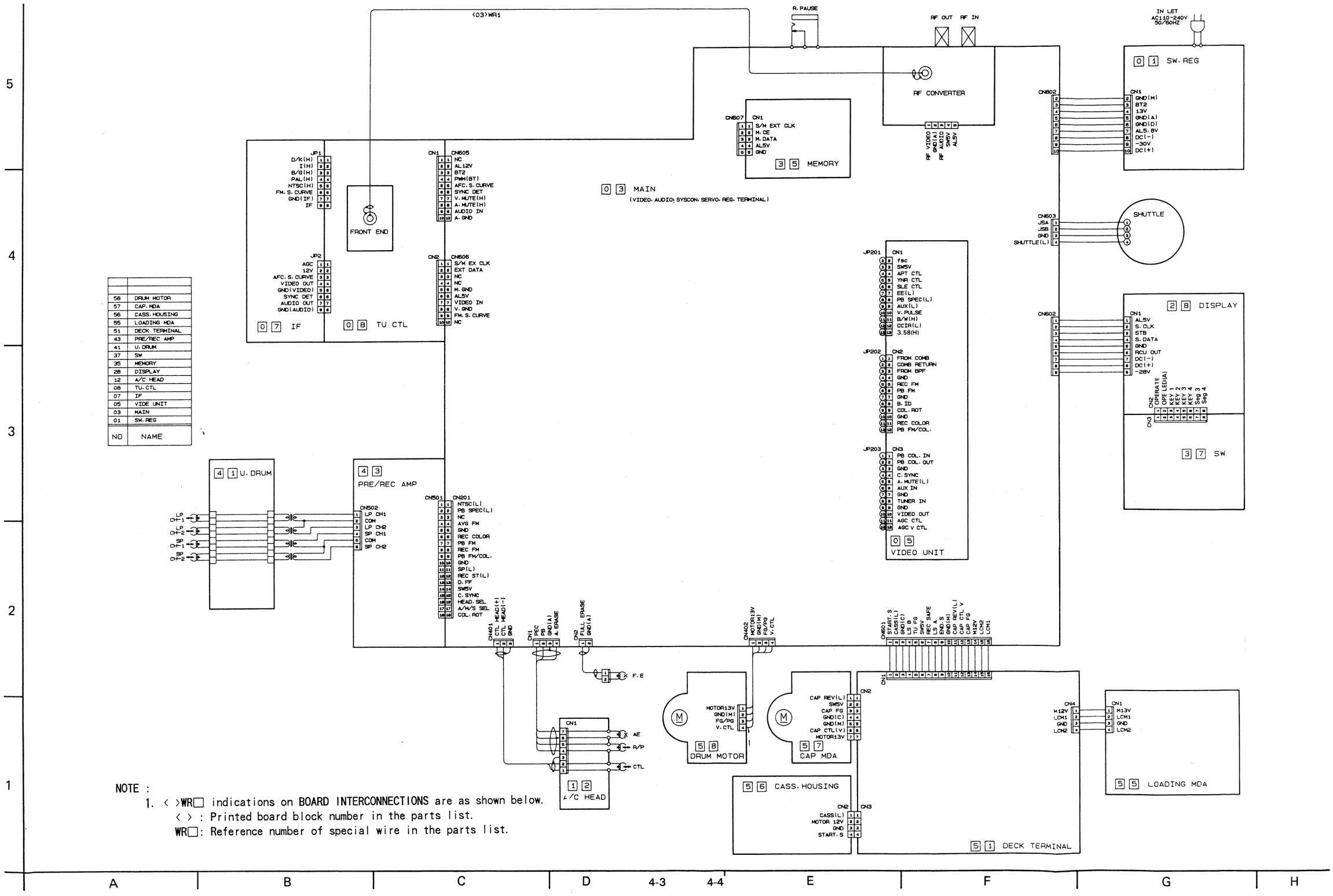
2) Double pattern :



Notes:
1) For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION No. 82054C (May 1991).
2) For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.

S40884

4.1 BOARD INTERCONNECTIONS

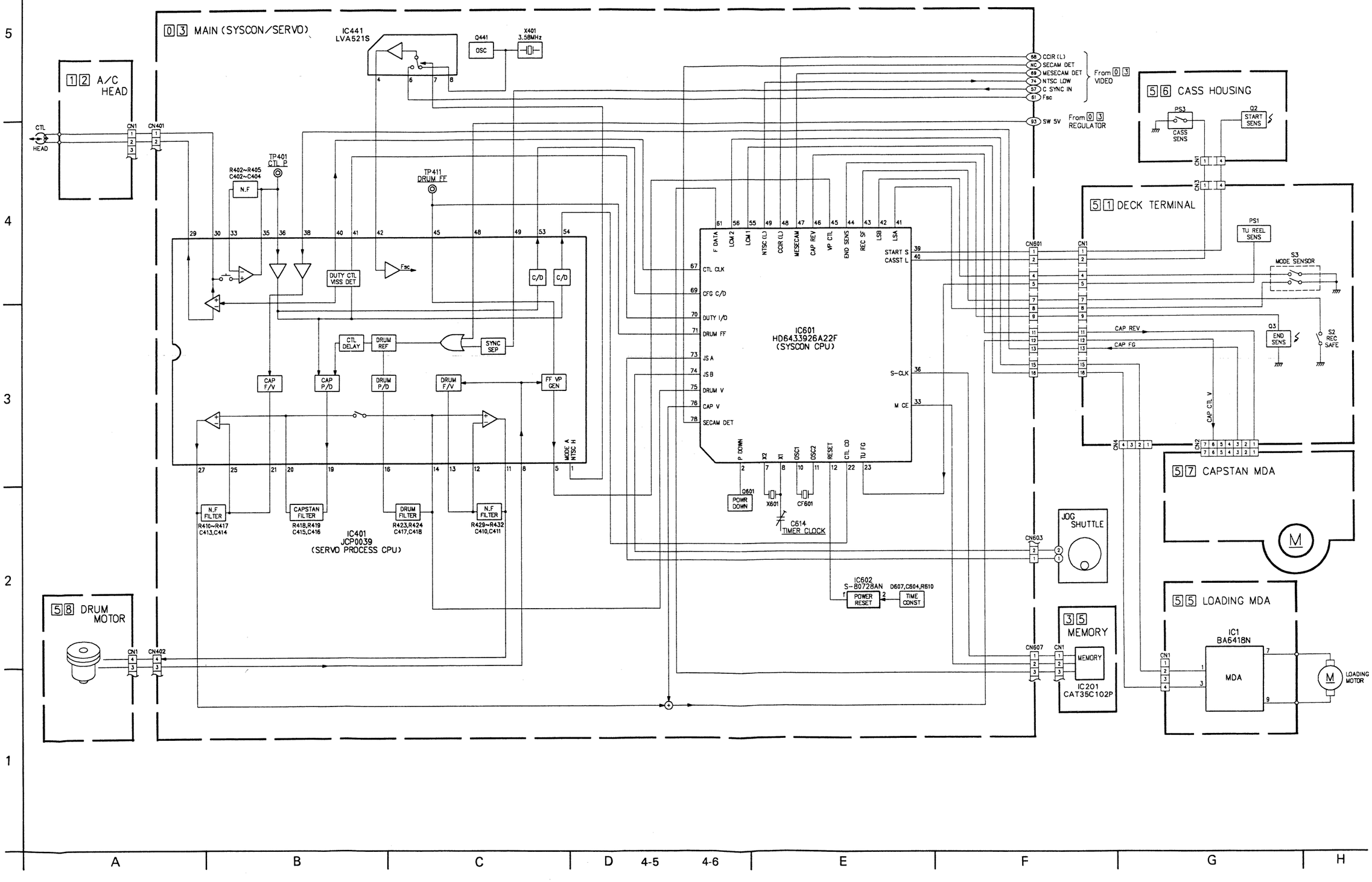


NO	NAME
58	DRUM MOTOR
57	CAP. MDA
56	CASS. HOUSING
55	LOADING MDA
51	DECK TERMINAL
43	PRE/REC AMP
41	U. DRUM
37	SW
35	MEMORY
28	DISPLAY
12	A/C HEAD
08	TU. CTL
07	IF
05	VIDE UNIT
03	MAIN
01	SW. REG

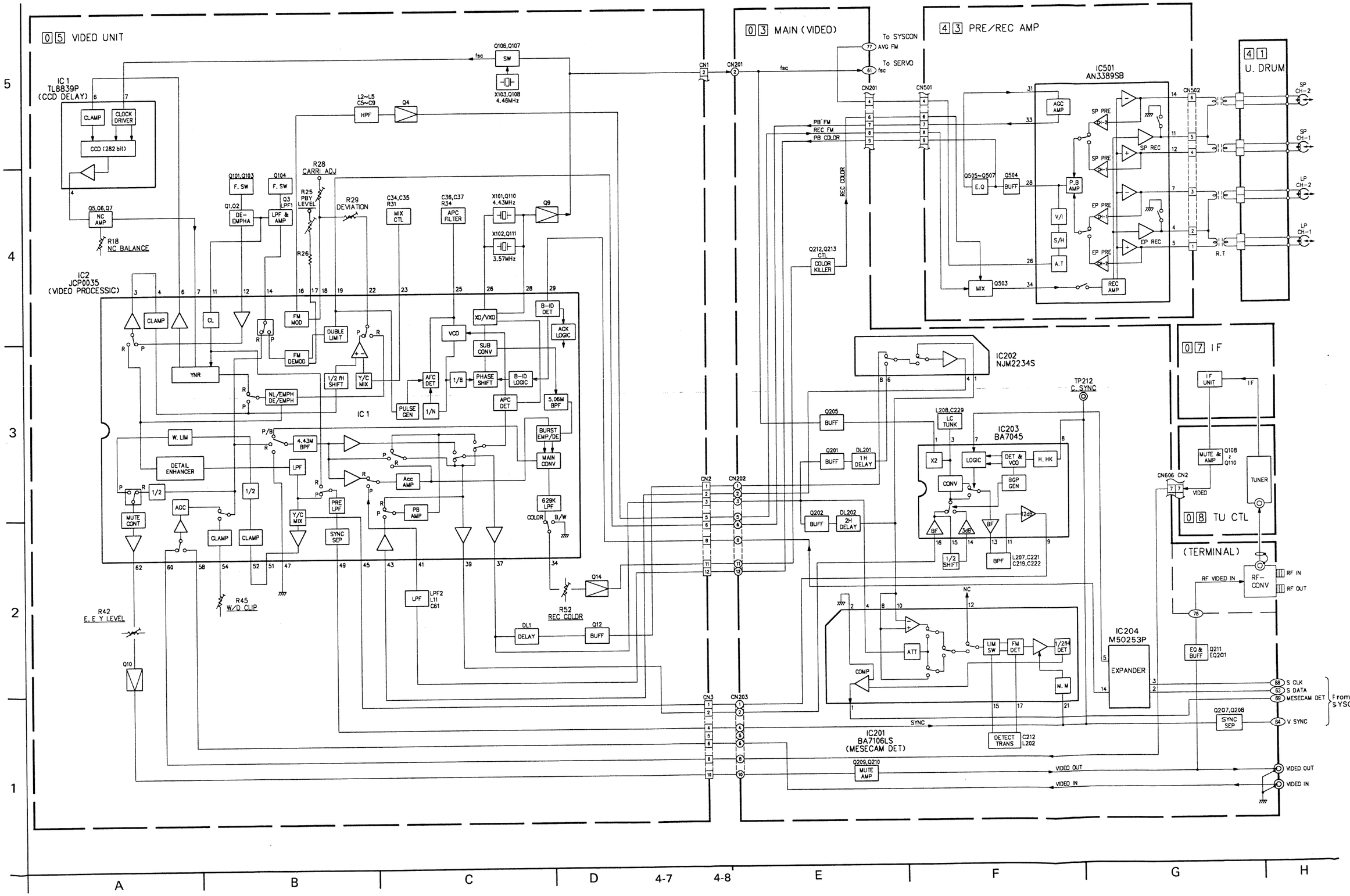
NOTE :

1. < >WR□ indications on **BOARD INTERCONNECTIONS** are as shown below.
   < > : Printed board block number in the parts list.
   WR□: Reference number of special wire in the parts list.

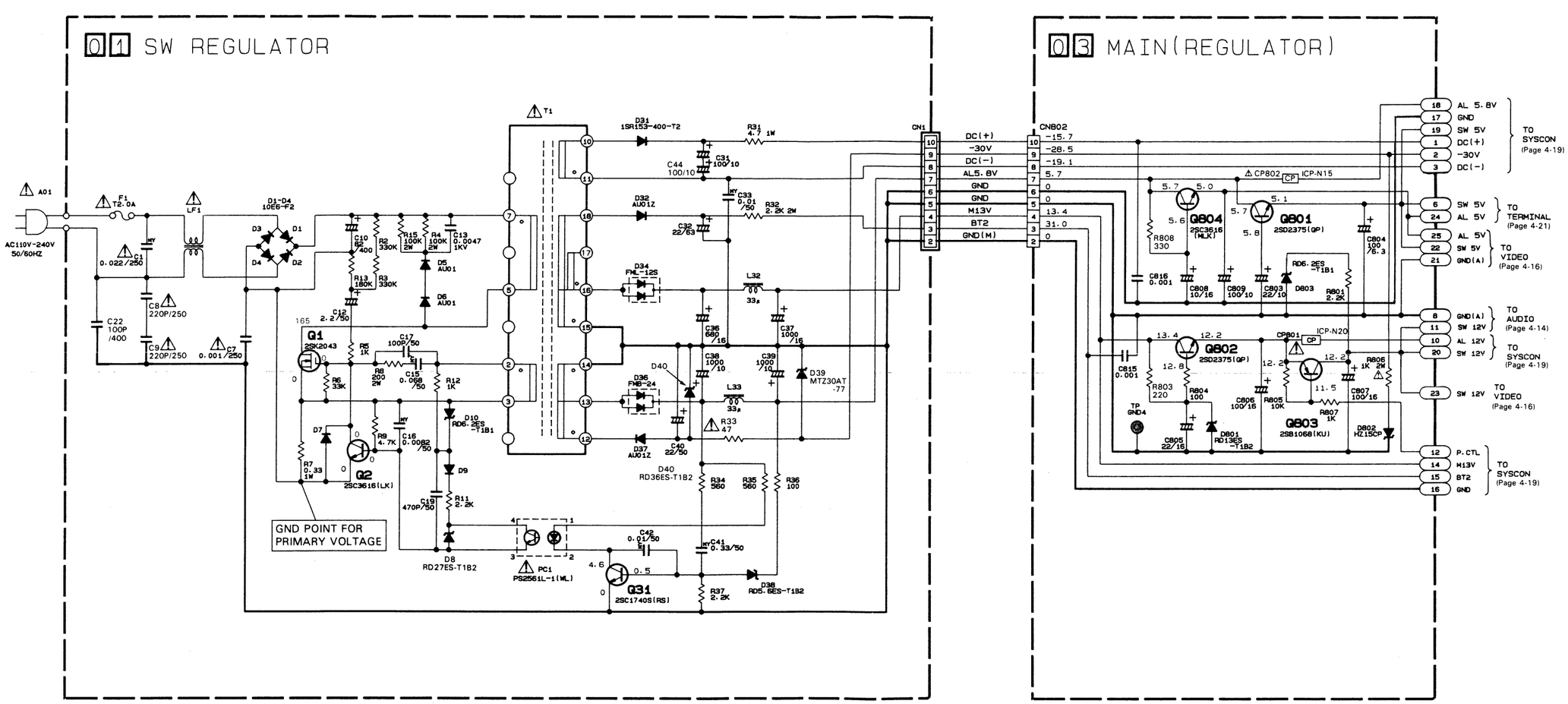
4.2 SYSCON/SERVO BLOCK DIAGRAM



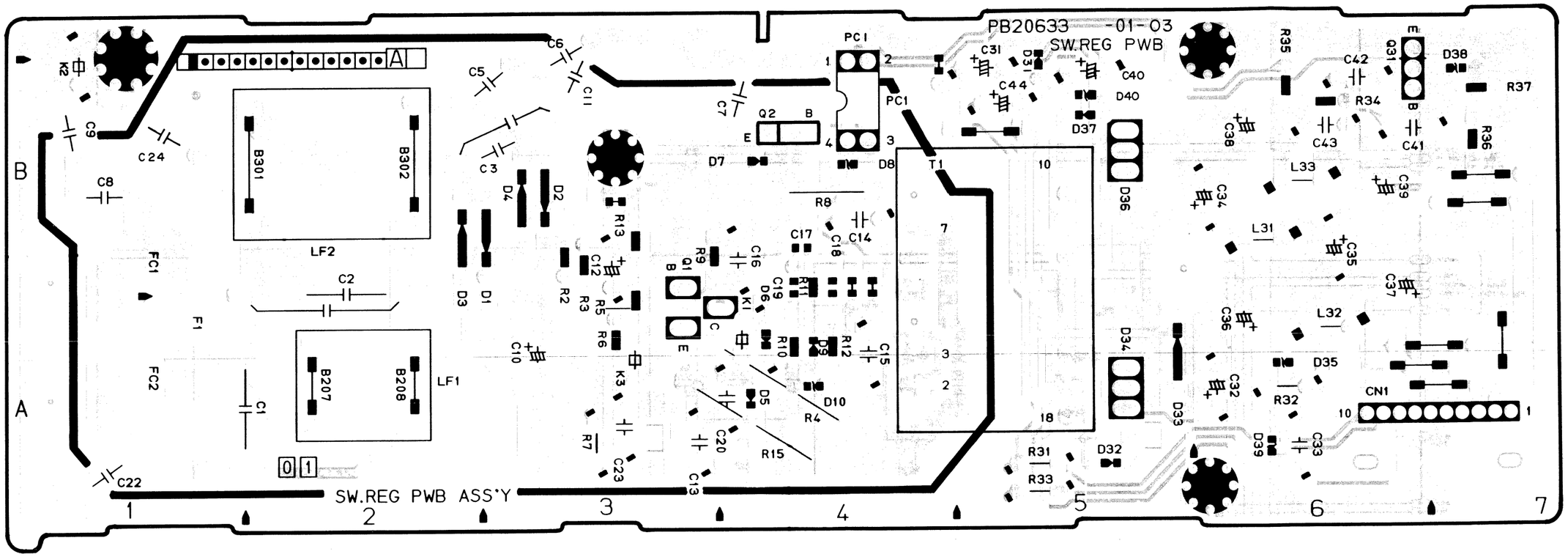
4.3 VIDEO BLOCK DIAGRAM



4.4 SWITCHING REGULATOR & REGULATOR SCHEMATIC DIAGRAMS



4.5 SWITCHING REGULATOR CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE <SW REG BOARD>

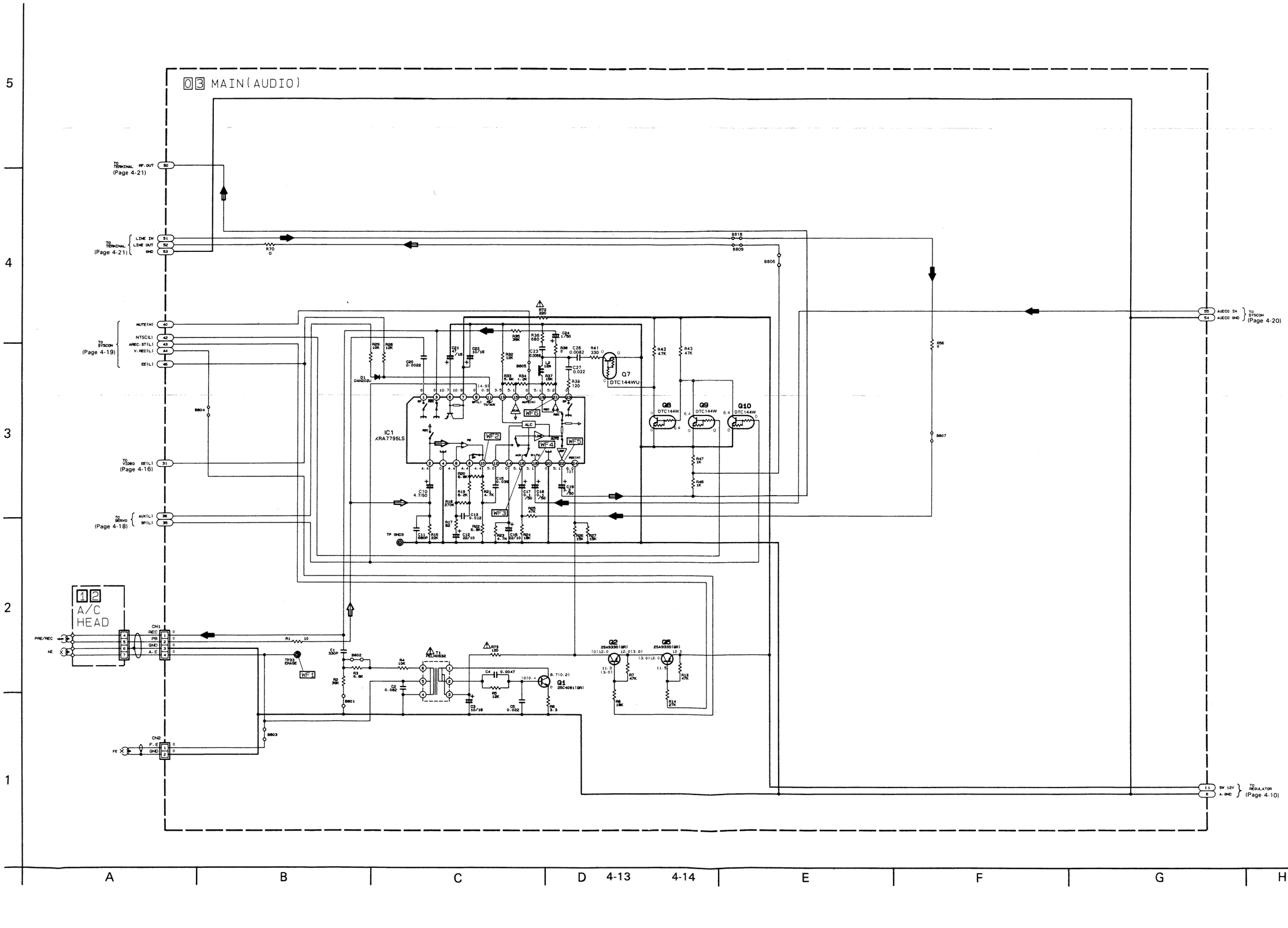
REF. No.	LOCATION
TRANSISTOR	
Q1	3A
Q2	4B
Q31	6B

REF. No.	LOCATION
DIODE	
D1	2B
D2	3B
D3	2B
D4	3B
D5	4A
D6	4A
D7	4B

REF. No.	LOCATION
DIODE	
D8	4B
D9	4A
D10	4A
D31	5B
D32	5A
D34	5A
D36	5B

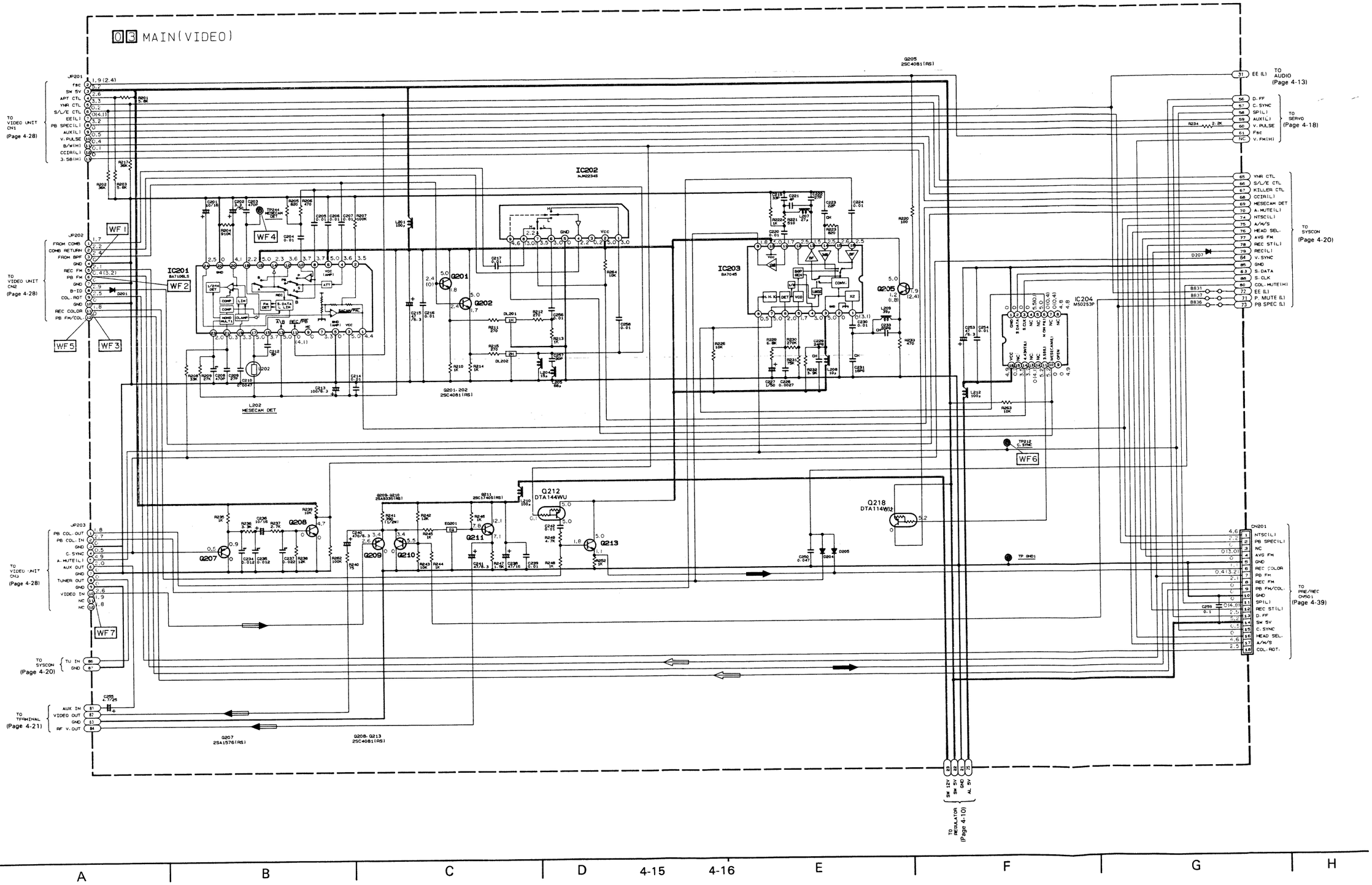
REF. No.	LOCATION
DIODE	
D37	5B
D38	7B
D39	6A
D40	5B
CONNECTOR	
CN1	6A

4.6 AUDIO SCHEMATIC DIAGRAM



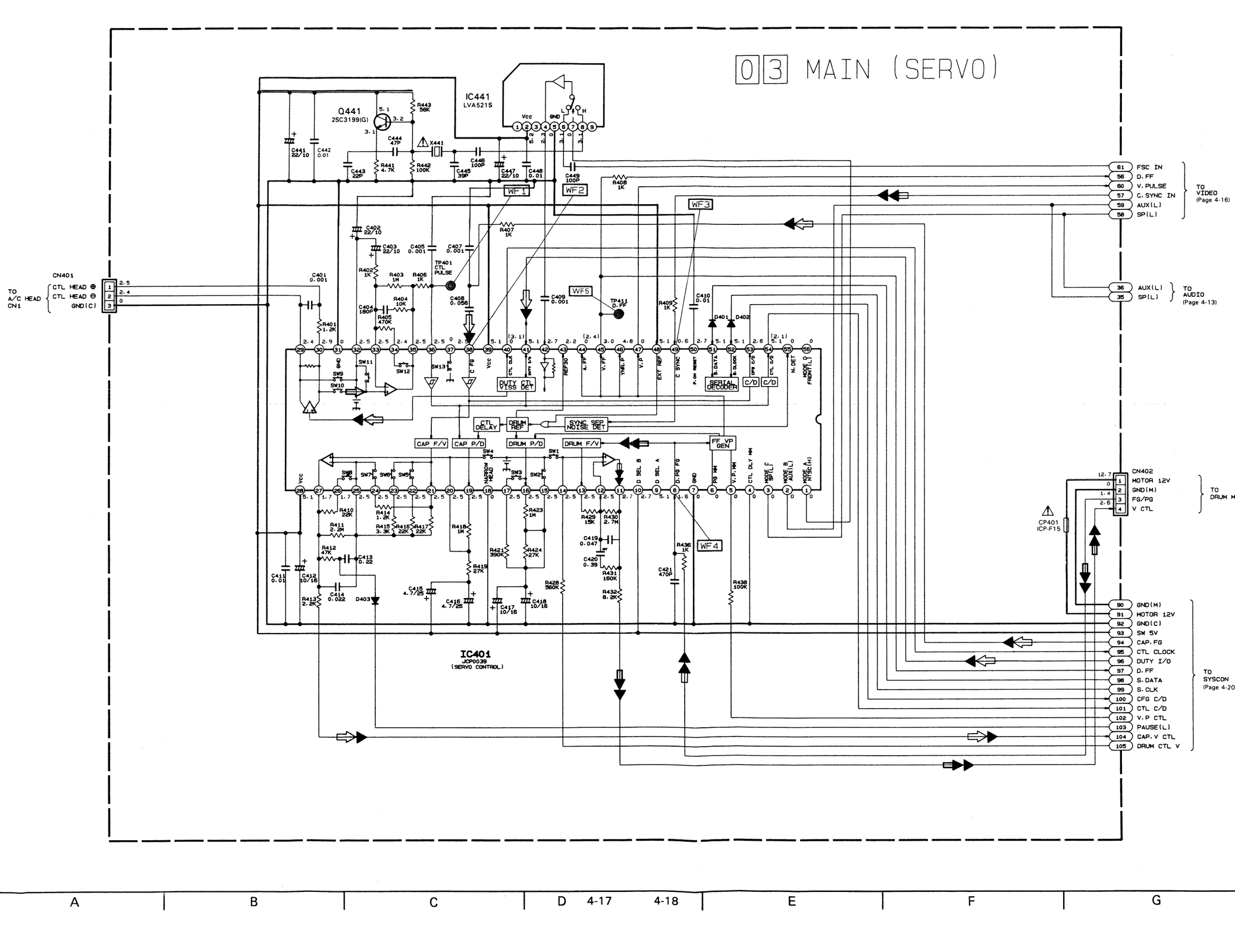
A B C D 4-13 4-14 E F G H

4.7 VIDEO SCHEMATIC DIAGRAM

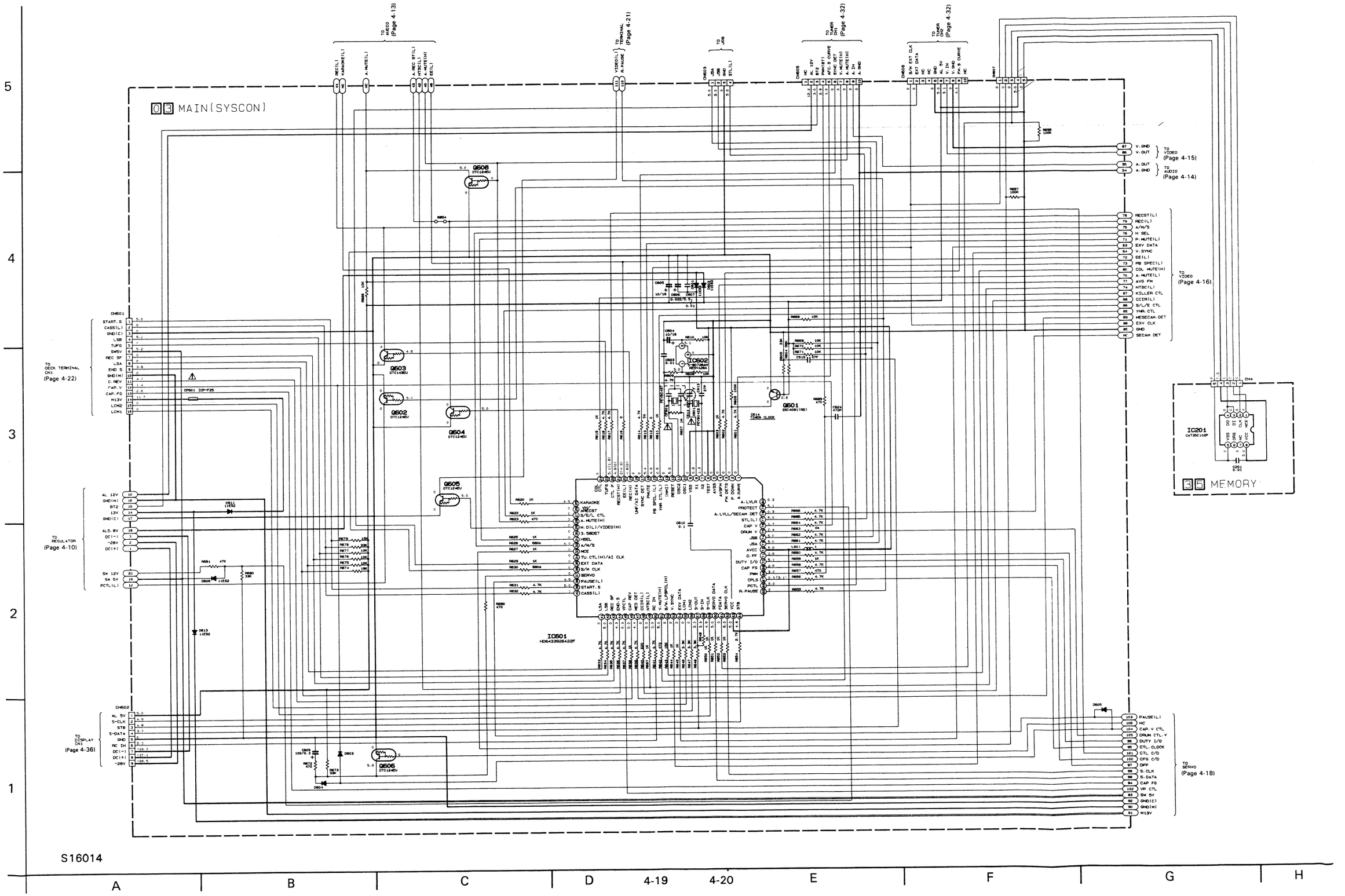


4-15 4-16

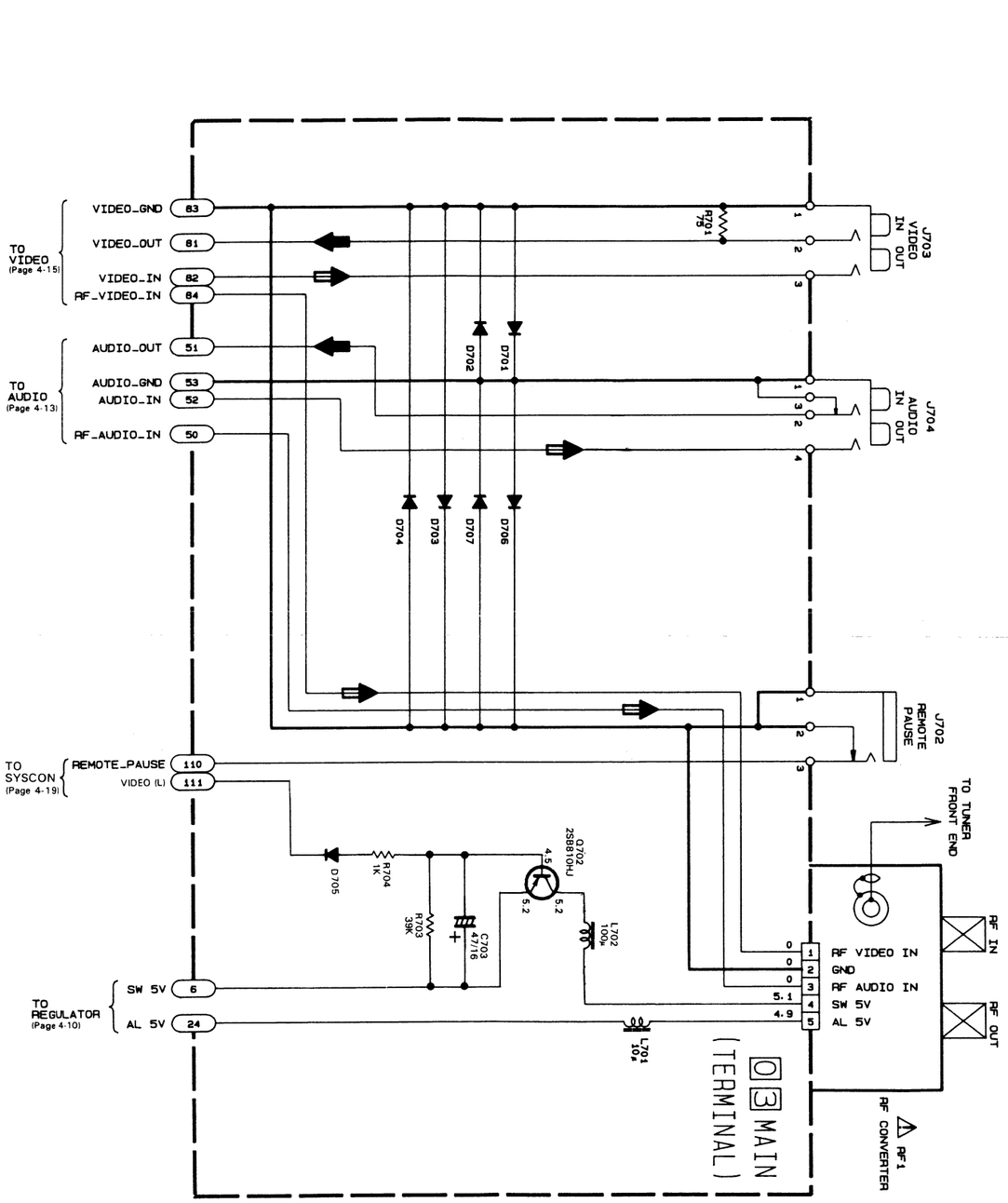
4.8 SERVO SCHEMATIC DIAGRAM



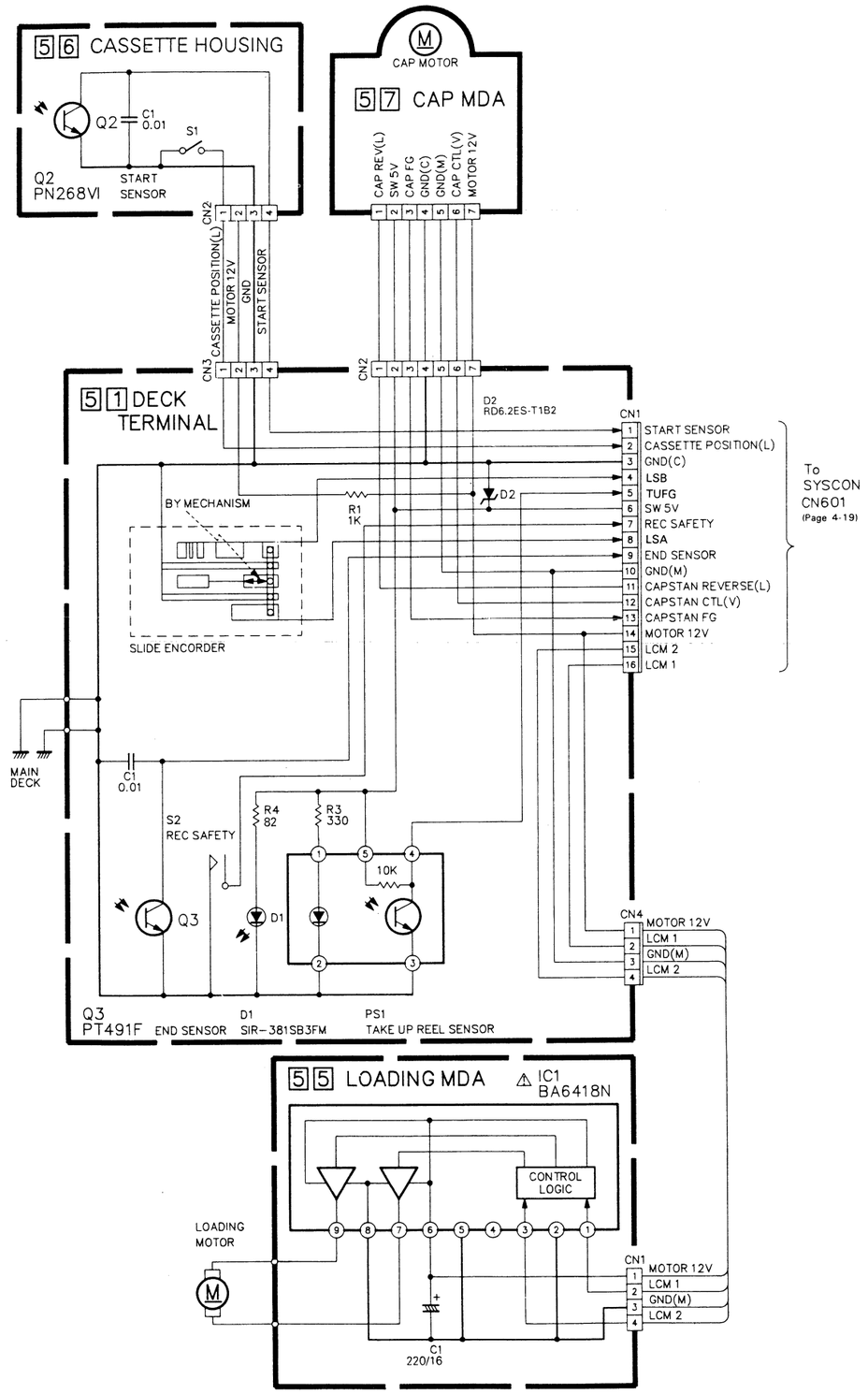
4.9 SYSCON SCHEMATIC DIAGRAM



4.10 TERMINAL SCHEMATIC DIAGRAM



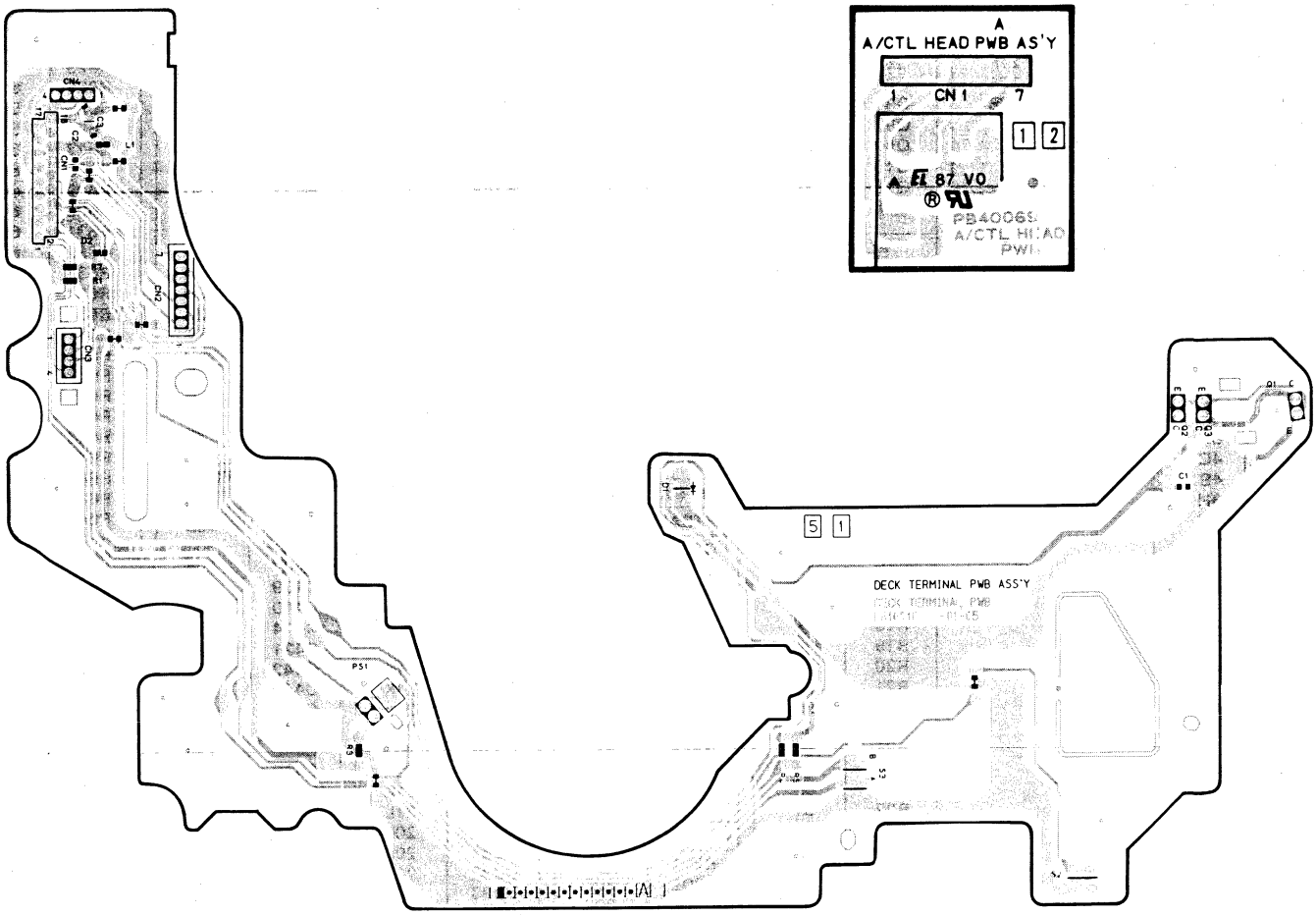
4.11 DECK TERMINAL, CASSETTE HOUSING, CAPSTAN MDA & LOADING MDA SCHEMATIC DIAGRAMS



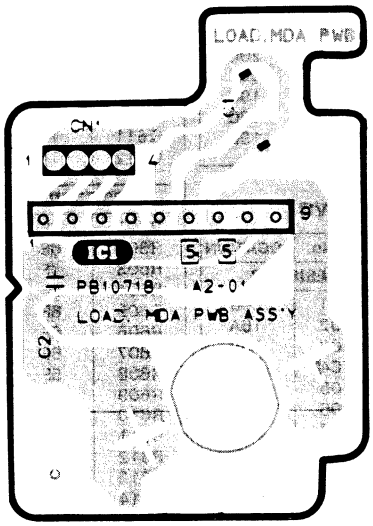
4.12 DECK TERMINAL, LOADING MDA, CASSETTE HOUSING & A/C HEAD CIRCUIT BOARDS

— DECK TERMINAL —

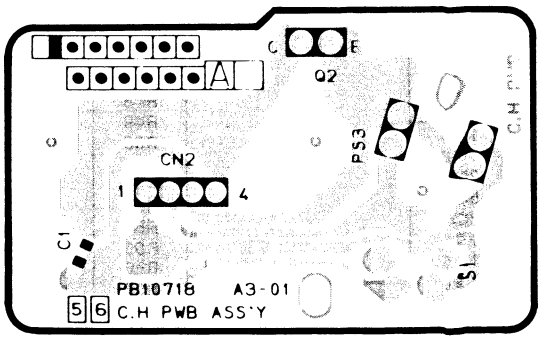
— A/C HEAD —



— LOADING MDA —



— CASSETTE HOUSING —



4.13 MAIN & MEMORY CIRCUIT BOARDS

MAIN COMPONENT PARTS LOCATION GUIDE <MAIN PWB>

REF. No.	LOCATION
IC	
IC1	9J
IC201	22G
IC202	21D
IC203	20K
IC401	15C
IC441	11B
IC601	7E
IC602	5F
TRANSISTOR	
Q1	8N
Q2	7K
Q5	7K
Q201	21D
Q205	21L
Q209	19J
Q210	19J
Q211	19L
Q441	12C
Q601	6F
Q602	8E
Q603	4C
Q604	4B
Q606	3H
Q608	5G
Q801	2B
Q802	2C
Q803	3D
Q804	2E
DIODE	
D1	9I
D3	2I
D201	19E
D207	16L
D210	19E
D401	13B
D402	13B
D403	16E
D601	7G
D602	7G
D603	3G
D604	4G
D605	3G
D606	6G
D701	10P
D702	10P
D703	10P
D704	10O
D706	10P
D707	10P
D801	1C
D802	2E
D803	2A
D811	2H
D812	1F
D813	3A
CONNECTOR	
CN1	10L
CN2	11M
CN5	2N
CN6	50
CN7	80
CN8	11N
CN9	11O
CN201	17L
CN401	19A
CN402	20A
CN601	1G
CN602	2A
CN603	20
CN605	12O
CN606	20L
CN607	21M
CN802	1D
ADJUSTMENT	
L202	21I
C614	6F

REF. No.	LOCATION
TEST POINT	
TP33	9L
TP212	22B
TP244	21F
TP401	18A
TP411	18B
TPGND1	18J
TPGND3	4K
TPGND4	2F
CP	
CP401	19A
CP601	3G
CP801	3C

LEADLESS COMPONENT PARTS LOCATION GUIDE <MAIN PWB>

• AUDIO

REF. No.	LOCATION
TRANSISTOR	
Q1	8M
Q3	10N
Q6	10I
Q7	8J
Q8	8I
Q9	9J
Q10	8J
Q13	2K
Q15	3K
Q16	11M
RESISTOR	
R1	10K
R2	9L
R3	9L
R4	9M
R5	8M
R6	8M
R7	8K
R8	7J
R9	10N
R10	9N
R11	7K
R12	7K
R13	7K
R14	6J
R15	4K
R16	10K
R17	9K
R18	9K
R19	9K
R20	9J
R21	9K
R22	9K
R23	9K
R24	9K
R25	8K
R26	8K
R27	8J
R29	10I
R30	9J
R31	9I
R32	9J
R33	9J
R34	9J
R35	10J
R36	8I
R37	8J
R38	8J
R39	8J
R40	10J
R41	8J
R42	8I
R43	9I
R44	7I
R45	7I
R46	8M
R47	8M
R48	2K
R49	3J
R50	7M
R51	7M
R52	7M
R53	7L
R54	6N
R55	6N
R56	6M
R57	6N
R58	3M
R59	3M
R60	3M
R61	3M
R62	3M
R63	3M
R64	2J
R65	3J
R66	8P
R67	7P
R68	9P
R69	8P
R70	9P
R71	8O
R72	10I
R73	9L

REF. No.	LOCATION
RESISTOR	
R74	7K
R75	10M
R76	11M
R77	2K
R78	3K
CAPACITOR	
C1	9L
C4	9M
C5	9M
C8	10N
C9	9N
C11	10J
C13	9J
C14	9K
C20	10J
C28	8M
C35	2L

• VIDEO

REF. No.	LOCATION
TRANSISTOR	
Q201	21D
Q202	21E
Q205	21L
Q206	20K
Q207	19C
Q208	19D
Q212	21F
Q213	19F
Q214	19G
Q215	21J
Q216	21I
Q217	19G
Q218	19E
RESISTOR	
R201	20C
R202	20C
R203	20C
R204	21F
R205	21F
R206	21F
R207	20F
R208	22H
R209	21H
R210	21D
R211	21D
R212	21C
R213	21C
R214	21E
R215	21E
R216	21E
R217	20C
R220	22M
R221	21J
R222	21J
R223	20K
R224	21K
R225	21K
R226	22L
R227	21L
R228	21K
R229	21K
R230	21K
R231	21K
R232	21L
R233	21L
R234	19D
R235	19C
R236	19C
R237	19C
R238	19C
R239	19D
R240	11N
R243	19J
R245	19K
R246	18L
R247	18L
R249	19F
R250	19F

REF. No.	LOCATION
RESISTOR	
R251	19F
R252	19G
R253	19G
R254	19G
R255	21J
R256	21J
R257	20I
R258	21I
R259	21I
R260	19H
R261	16L
R262	19D
R263	19E
R264	21B
R265	19F
R267	20C
CAPACITOR	
C203	21F
C204	21F
C205	21F
C206	21F
C207	20F
C209	22H
C210	21G
C212	21G
C214	21G
C216	21C
C217	20D
C218	21J
C219	21J
C220	21K
C221	21K
C222	21J
C223	21J
C224	20J
C225	22K
C228	21K
C229	21L
C230	20K
C231	20K
C232	20K
C233	20L
C239	18K
C242	19F
C243	19G
C244	19G
C246	19F
C247	21J
C249	20I
C250	19H
C252	15L
C254	16G
C255	19J
C257	21E
C258	21E
C260	20C
C261	20C
C263	19C
C264	19C
C265	19D

• SERVO

REF. No.	LOCATION
RESISTOR	
R401	16B
R402	16A
R403	16B
R404	15B
R405	16B
R406	15B
R407	15B
R409	14C
R410	16D
R411	16D
R412	16D
R414	16D
R415	16D
R416	16D
R417	15D
R418	15C

REF. No.	LOCATION
RESISTOR	
R419	15C
R421	14D
R422	14C
R423	14C
R424	14D
R429	14C
R430	14D
R431	14D
R433	13D
R434	14D
R435	14C
R438	13D
R441	11C
R442	12C
R443	12B
R451	11D
R452	11D
R453	12D
R454	12D
R455	12D
R456	12C
CAPACITOR	
C401	17B
C404	16B
C405	16B
C407	15A
C409	14B
C410	14C
C414	17D
C421	14D
C442	11C
C443	11C
C444	12B
C445	12C
C446	13B
C449	12B
C453	11D
C455	11D

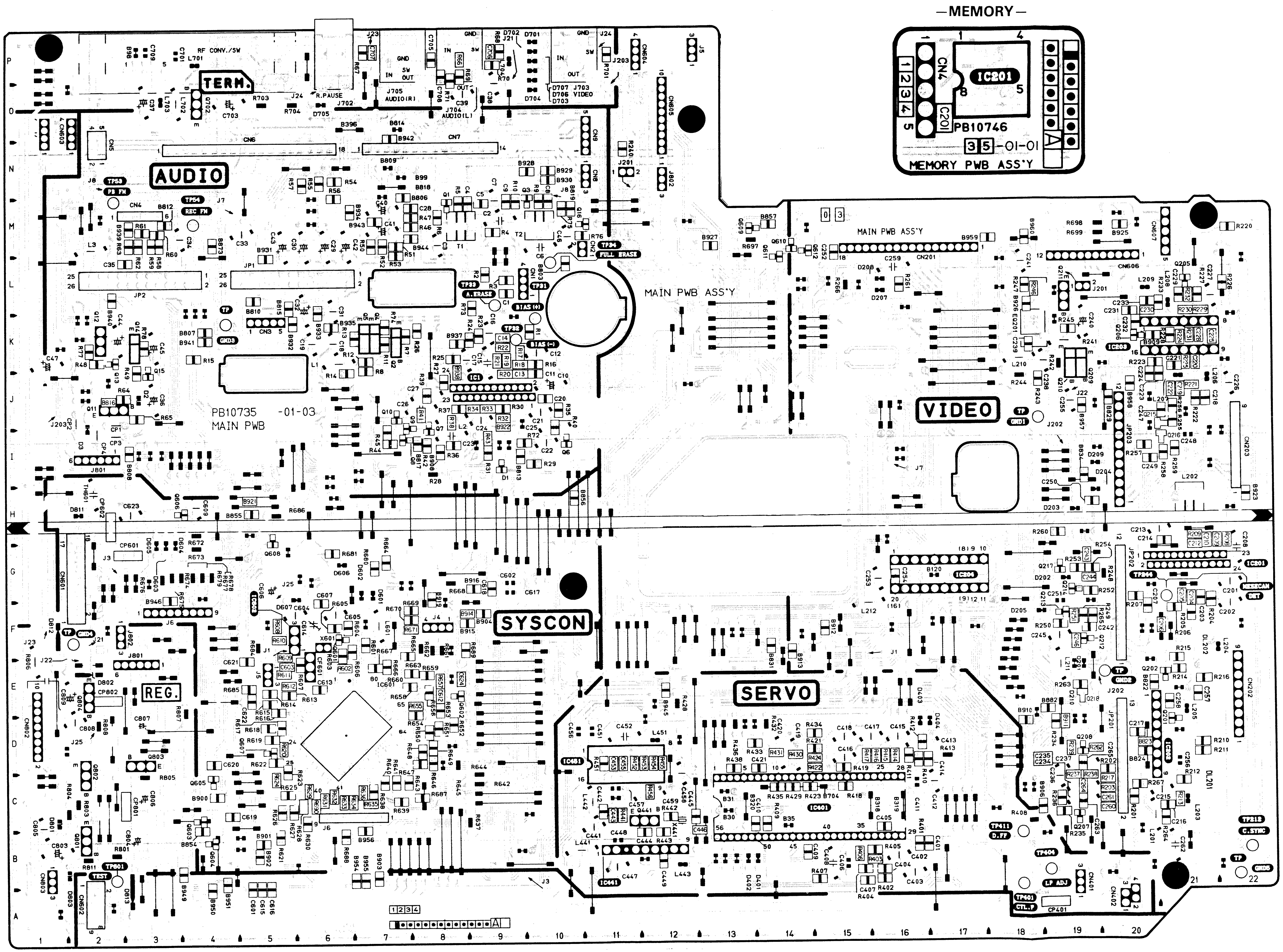
• SYSCON

REF. No.	LOCATION
IC	
IC601	6D
TRANSISTOR	
Q601	6F
Q602	8E
Q603	4C
Q604	4B
Q605	4C
Q606	4H
Q607	5D
Q608	5G
Q609	13M
Q610	14M
Q611	14M
Q612	14M
RESISTOR	
R601	7F
R602	6E
R603	6F
R604	6F
R605	6F
R606	6F
R607	6E
R608	5F
R609	5F
R610	5F
R611	5E
R612	5E
R613	5E
R614	5E
R615	5E
R616	5E
R617	5D
R618	5D
R619	5D
R620	5D

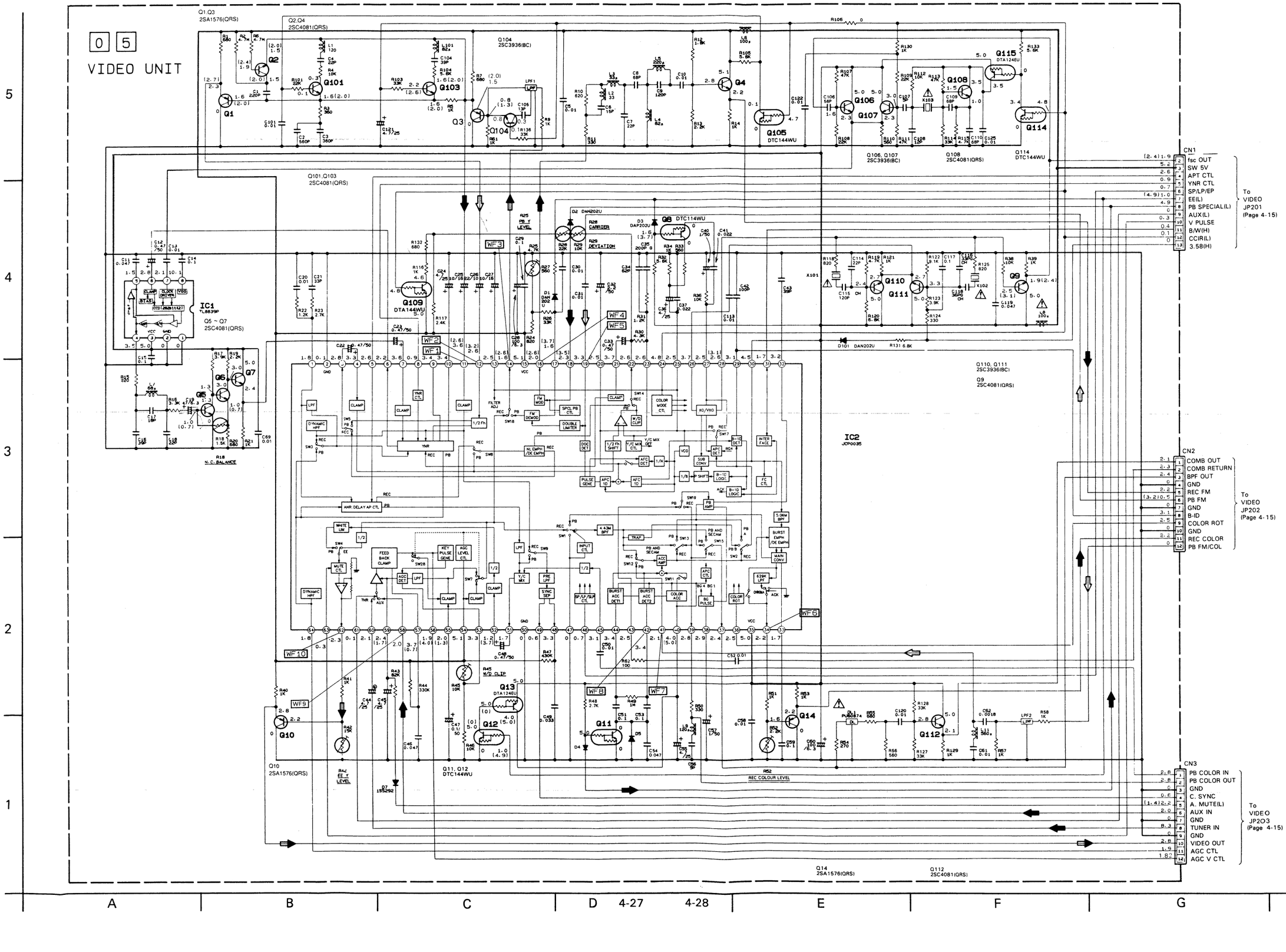
REF. No.	LOCATION
RESISTOR	
R621	5B
R622	5D
R623	5C
R624	5C
R625	5C
R626	5C
R627	5C
R628	6C
R629	6C
R630	6C
R631	6C
R632	6C
R633	6C
R634	6C
R635	7C
R636	7C
R638	7C
R639	7C
R640	7C
R641	7C
R643	7C
R646	8D
R647	8D
R648	8D
R649	8D
R650	8D
R651	8D
R652	8D
R653	8E
R654	8E
R655	8E
R656	8E
R657	8E
R658	8E
R659	8E
R660	8E
R663	8E
R664	7F
R666	7E
R667	7E
R668	9G
R669	7F
R670	7F
R671	7F
R680	7F
R681	6F
R685	5E
R687	8C
R688	6B
R689	8F
R690	6C
CAPACITOR	
C601	5A
C603	5E
C607	6F
C612	8E
C613	6E
C615	5A
C616	5A
C618	9G
C619	4C
C620	4D
C621	5E
C622	5E
C624	8E

• TERMINAL

REF. No.	LOCATION
RESISTOR	
R701	11P
CAPACITOR	
C705	8P
C706	9P
C707	8P
C708	8P


—MEMORY—
IC201
CN4
C201
PB10746
35-01-01
MEMORY PWB ASS'Y
RF CONV./SW
TERM.
R.PAUSE
J705 AUDIO(R)
J704 AUDIO(L)
J703 VIDEO
AUDIO
MAIN PWB ASS'Y
PB10735 -01-03
MAIN PWB
FULL ERASE
A.ERASE
BIAS (+)
BIAS (−)
PB FM
REC FM
VIDEO
SYSCON
SERVO
REG.
TEST
LP ADJ
CTL.P
D.FF
C.SYNC
MESECAM
DET

4.14 VIDEO UNIT SCHEMATIC DIAGRAM



4.15 VIDEO UNIT CIRCUIT BOARD

MAIN COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT BOARD>

REF. No.	LOCATION
IC	
IC1	9C
IC2	3B

REF. No.	LOCATION
TRANSISTOR	
Q1	2C
Q2	2D
Q3	1D
Q4	6D
Q5	8D
Q6	9D
Q7	8C
Q9	5C
Q10	2B
Q11	4A
Q12	4B
Q13	5B
Q14	5A
Q106	6C
Q110	5C
Q111	5D
Q112	6A

REF. No.	LOCATION
DIODE	
D1	3B
D2	4D
D5	4A
D7	3A
D101	6C

REF. No.	LOCATION
CONNECTTOR	
CN1	8A
CN2	5A
CN3	2A

REF. No.	LOCATION
ADJUSTMENT	
R18	8D
R25	3B
R28	4C
R29	4C
R42	1B
R45	3B
R52	5A

LEADLESS COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT BOARD>

REF. No.	LOCATION
TRANSISTOR	
Q1	2C
Q2	2D
Q3	1D
D4	6D
Q5	8D
Q6	9D
Q7	8C
Q8	7D
Q9	5C
Q10	2B
Q11	4A
Q12	4B
Q13	5B
Q14	5A
Q101	2C
Q102	3D
Q103	1C
Q104	1D
Q105	3D
Q106	6C
Q107	6C
Q108	8C
Q109	3C
Q110	5C

REF. No.	LOCATION
TRANSISTOR	
Q111	5D
Q112	6A
Q114	9B
Q115	8C

REF. No.	LOCATION
DIODE	
D1	3B
D2	4D
D3	8D
D6	3B
D101	6C

REF. No.	LOCATION
RESISTOR	
R1	2D
R2	2D
R3	2C
R4	2D

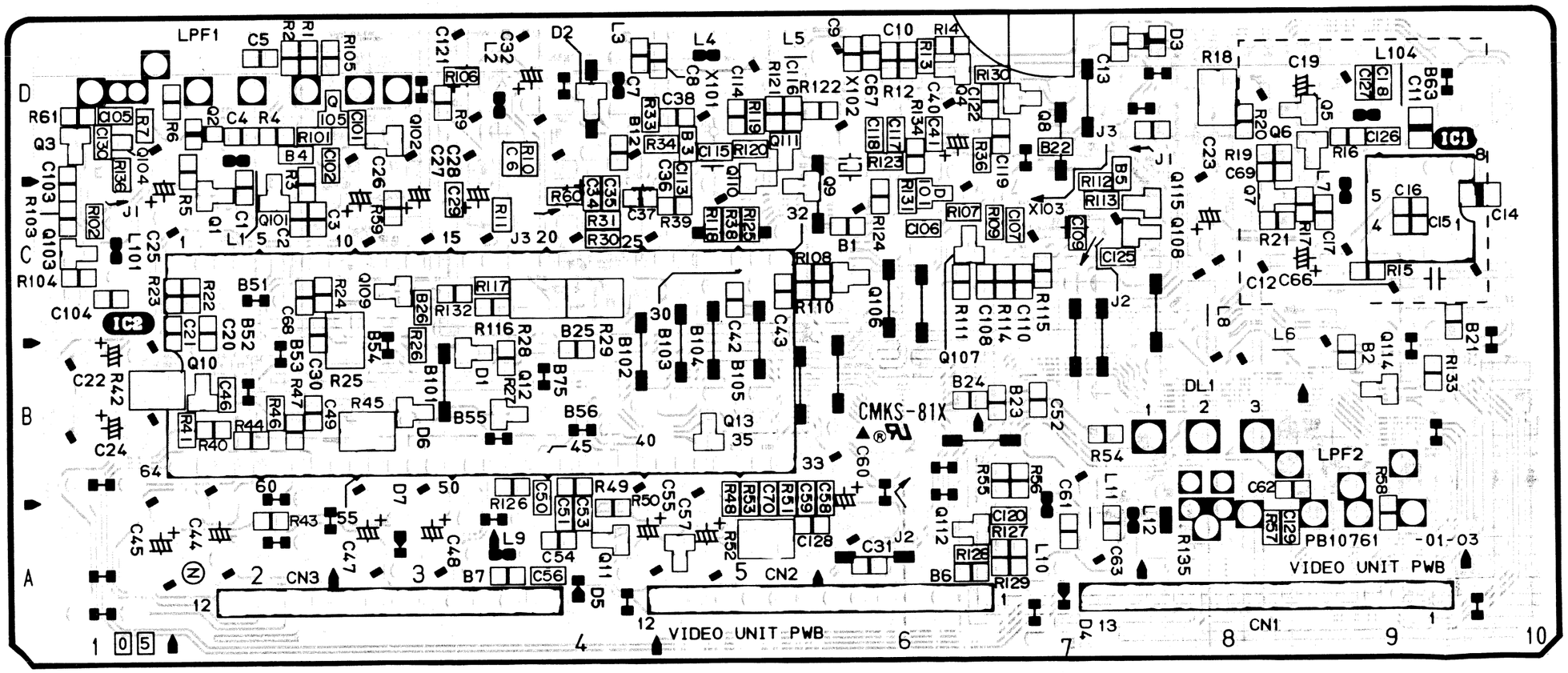
REF. No.	LOCATION
RESISTOR	
R5	2D
R6	2D
R7	1D
R9	3D
R10	4D
R11	4C
R12	6D
R13	6D
R14	6D
R15	9C
R16	9D
R17	9B
R18	8D
R19	8D
R20	8D
R21	8C
R22	2C
R23	2C
R24	2B
R25	3B
R26	3B
R27	4B
R28	4C
R29	4C

REF. No.	LOCATION
RESISTOR	
R30	4C
R31	4C
R32	8D
R33	4C
E34	5C
R36	7D
R38	5C
R39	5C
R40	2B
R41	2B
R42	1B
R43	2A
R44	2B
R45	3B
R46	2B
R47	2B
R48	5A
R49	4A
R50	4A
R51	5A
R52	5A
R53	5A
R54	7B
R55	7B

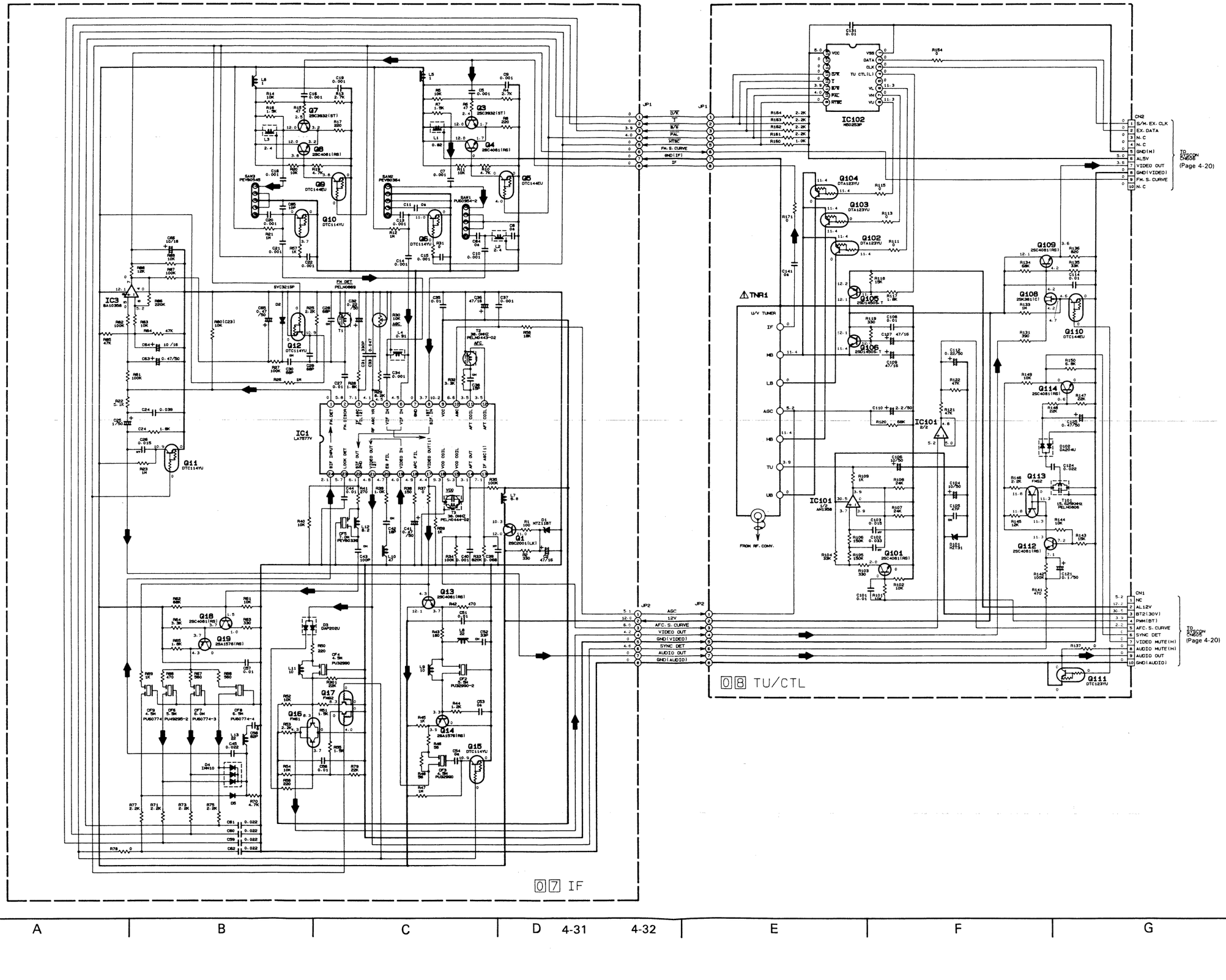
REF. No.	LOCATION
RESISTOR	
R56	7B
R57	8A
R58	9A
R59	3C
R60	4C
R61	1D
R101	2D
R103	1C
R104	1C
R105	2D
R106	3D
R107	6B
R108	5C
R109	7B
R110	5C
R111	6C
R112	7C
R113	7C
R114	7C
R115	7C
R116	4C
R117	4C
R118	5C
R119	5D
R120	5D
R121	5D
R122	6D
R123	6D
R124	6C
R125	5C
R126	4A
R127	7A
R128	6A
R129	7A
R130	7D
R131	6C
R132	3C
R133	9B
R134	6D
R136	1D

REF. No.	LOCATION
CAPACITOR	
C1	2C
C2	2C
C3	2C
C4	2D
C5	2D
C6	4D
C7	4D
C8	5D
C9	6D
C10	6D
C11	9D
C13	7D
C14	10C
C15	9C
C16	9C
C17	9C
C18	9D
C20	2C
C21	2C
C29	3C
C30	2B

REF. No.	LOCATION
CAPACITOR	
C31	6A
C34	4C
C35	4C
C37	4C
C38	5D
C41	6D
C42	5C
C43	5C
C46	2B
C49	2B
C49	2B
C50	4A
C51	4A
C52	7B
C53	4A
C54	4A
C56	4A
C58	6A
C59	5A
C61	7A
C62	8B
C63	7A
C67	6D
C68	2C
C69	8C
C70	5A
C101	3D
C102	2D
C103	1D
C104	1C
C105	1D
C106	6C
C107	7C
C108	7C
C109	7C
C110	7C
C113	5C
C114	5D
C115	5D
C116	5D
C117	6D
C118	6D
C119	7D
C120	7A
C122	7D
C125	7C
C126	9D
C127	9D
C128	5A
C129	8A
C130	1D

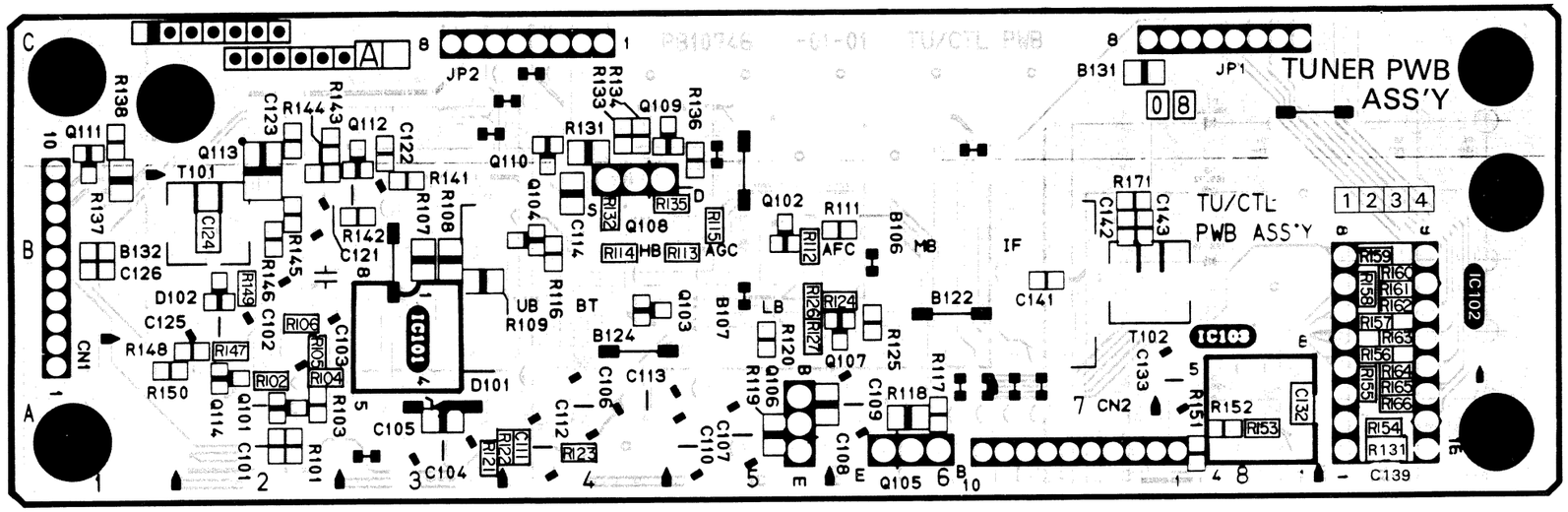


4.16 TUNER CONTROL & IF SCHEMATIC DIAGRAMS

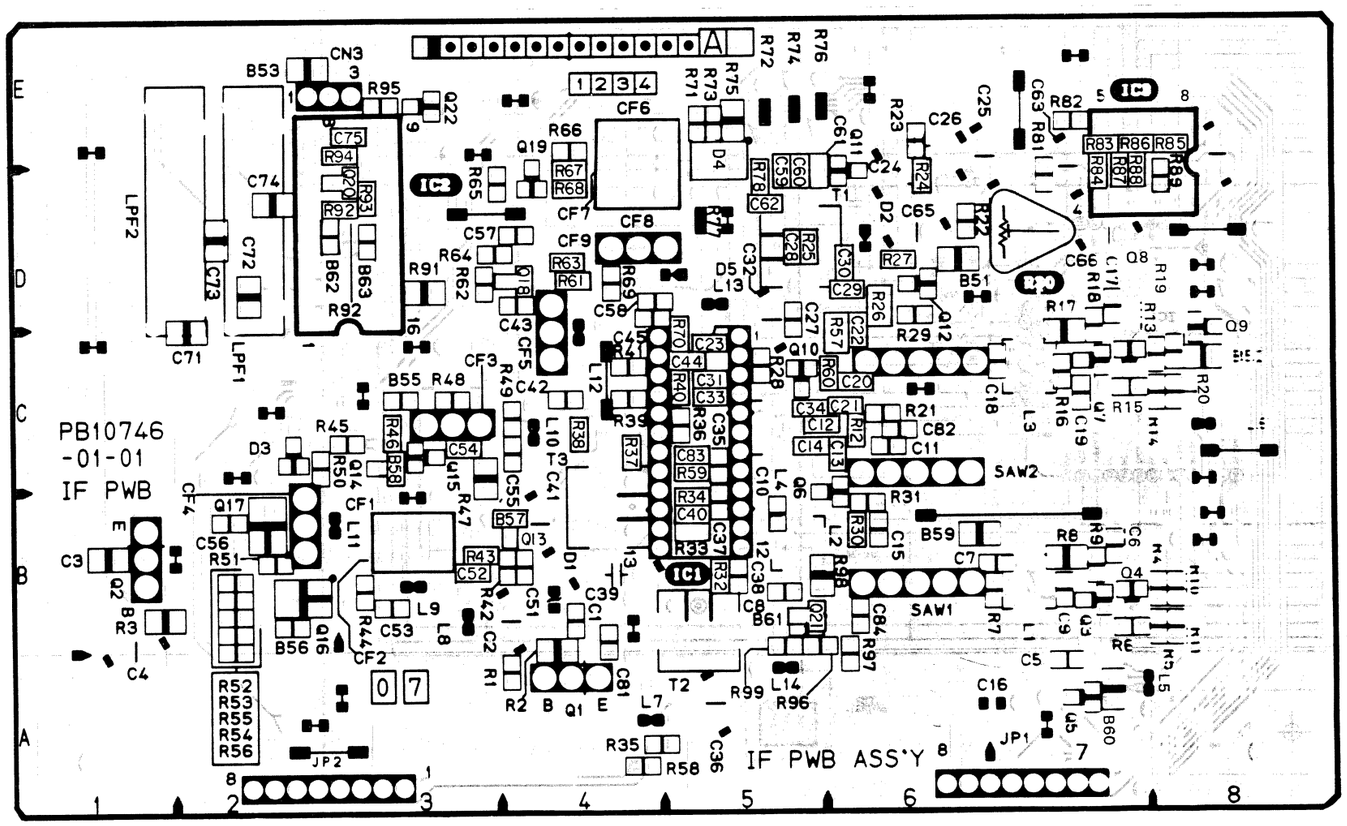


4.17 TUNER CONTROL & IF CIRCUIT BOARDS

—TUNER/CONTROL—



—IF—



MAIN COMPONENT PARTS LOCATION GUIDE <TUNER CTL PWB>

REF. No.	LOCATION
IC	
IC101	3A
IC102	9B
TRANSISTOR	
Q101	2A
Q102	5B
Q103	5B
Q104	4B
Q105	6A
Q106	5A
Q107	6A
Q108	4B
Q109	5C
Q110	4C
Q111	1C
Q112	3C
Q113	2C
Q114	2A
DIODE	
D101	3A
D102	2B
CONNECTOR	
CN1	1A
CN2	7A

LEADLESS COMPONENT PARTS LOCATION GUIDE <TUNER CTL PWB>

REF. No.	LOCATION
TRANSISTOR	
Q101	2A
Q102	5B
Q103	4B
Q104	4B
Q107	6A
Q109	5C
Q110	4C
Q111	1C
Q112	3C
Q114	2A
DIODE	
D102	2B
RESISTOR	
R101	2A
R102	2A
R103	2A
R104	2A
R105	2A
R106	2B
R107	3B
R108	3B
R109	3B
R111	6B
R112	5B
R113	5B
R114	4B
R115	5B
R116	4B
R117	6A
R118	6A
R119	5B
R120	5B
R121	3A
R122	4A
R123	4A
R124	6B
R125	6B

REF. No.	LOCATION
RESISTOR	
R126	5B
R127	5B
R131	4C
R132	4B
R133	4C
R134	4C
R135	5B
R136	5C
R137	1B
R138	1C
R141	3B
R142	3B
R143	2C
R144	2C
R145	2B
R146	2B
R147	2A
R148	2A
R149	2B
R150	1A
R151	8A
R152	8A
R153	8A
R154	9A
R155	9A
R156	9A
R157	9B
R158	9B
R159	9B
R160	9B
R161	9B
R162	9B
R163	9A
R164	9A
R165	9A
R166	9A
R171	7B

REF. No.	LOCATION
CAPACITOR	
C101	2A
C105	3A
C108	6E
C111	4A
C114	4B
C122	3C
C123	2C
C124	2B
C126	1B
C131	9A
C132	8A
C141	7B
C142	7B
C143	7B

MAIN COMPONENT PARTS LOCATION GUIDE <IF PWB>

REF. No.	LOCATION
IC	
IC1	5B
IC3	7E
TRANSISTOR	
Q1	4A
Q3	7B
Q18	4D
Q19	4E
DIODE	
D1	4B
D2	6D
D4	5E
CONNECTOR	
JP1	7A
JP2	2A
ADJUSTMENT	
R30	7D
T1	6D
T2	5A
T3	4C

LEADLESS COMPONENT PARTS LOCATION GUIDE <IF PWB>

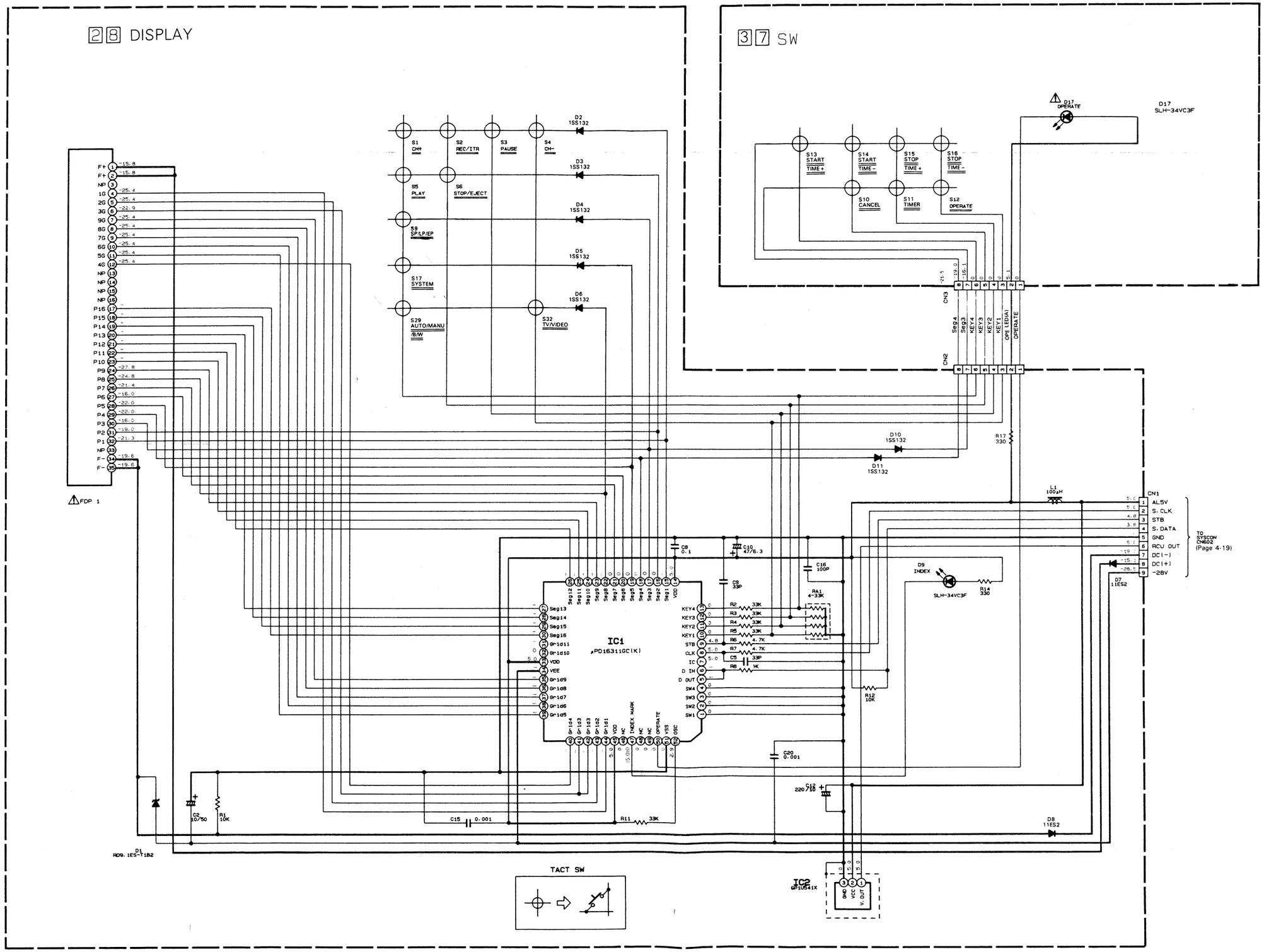
REF. No.	LOCATION
TRANSISTOR	
Q3	7B
Q5	7A
Q6	6B
Q8	7C
Q9	8C
Q10	5C
Q11	6E
Q12	6D
Q13	4B
Q14	3B
Q15	3C
Q16	2B
Q17	2B
Q18	4D
Q19	4E
Q20	3D
Q21	5B
Q22	3E
DIODE	
D3	2C
D4	5E
RESISTOR	
R1	4A
R2	4A
R3	1B
R4	8B
R5	8B
R6	7B
R7	7B
R8	7B
R9	7B
R10	8B
R11	8B
R12	6C
R13	7C
R14	8C
R15	7C
R16	7C
R17	7D
R18	7D
R19	8C
R20	8C

REF. No.	LOCATION
RESISTOR	
R21	6C
R22	6D
R23	6E
R24	6D
R25	5D
R26	6D
R27	6D
R28	5C
R29	6D
R30	6B
R31	6B
R32	5B
R33	5B
R34	5B
R35	4A
R36	5C
R37	4C
R38	4C
R39	4C
R40	5C
R41	4C
R42	4B
R43	3B
R44	3B
R45	3C
R46	3C
R47	3B
R48	3C
R49	4C
R50	2C
R51	2B
R52	2B
R53	2B
R54	2B
R55	2B
R56	2B
R57	6C
R58	5A
R59	5C
R60	6C
R61	4D
R62	4D
R63	4D
R64	3D
R65	3D

REF. No.	LOCATION
RESISTOR	
R66	4E
R67	4D
R68	4D
R69	4D
R70	5C
R71	5E
R73	5E
R75	5E
R78	5E
R81	7E
R82	7E
R83	7E
R84	7E
R85	8E
R86	8E
R87	7E
R88	7E
R89	8D
R91	3D
R92	3D
R93	3D
R94	3E
R95	3E
R96	5B
R97	6A
R98	6B
R99	5B
CAPACITOR	
C1	4B
C3	1B
C5	7A
C8	5B
C10	5B
C11	6C
C12	5C
C13	6C
C14	5C
C15	6B
C18	7C
C20	6C
C21	6C
C22	6C

REF. No.	LOCATION
CAPACITOR	
C23	5C
C27	5D
C28	5D
C29	6D
C30	6D
C31	5C
C33	5C
C34	5C
C35	4C
C37	5B
C38	5B
C40	5B
C42	4C
C43	4D
C44	5C
C45	4D
C51	4B
C52	3B
C53	3B
C54	4C
C55	4C
C56	2B
C57	4D
C58	4D
C59	5D
C60	5D
C61	5D
C62	5D
C71	2C
C72	2D
C73	2D
C74	2D
C75	3E
C81	4A
C82	6C
C83	5C
C84	6B

4.18 DISPLAY & SWITCH SCHEMATIC DIAGRAMS



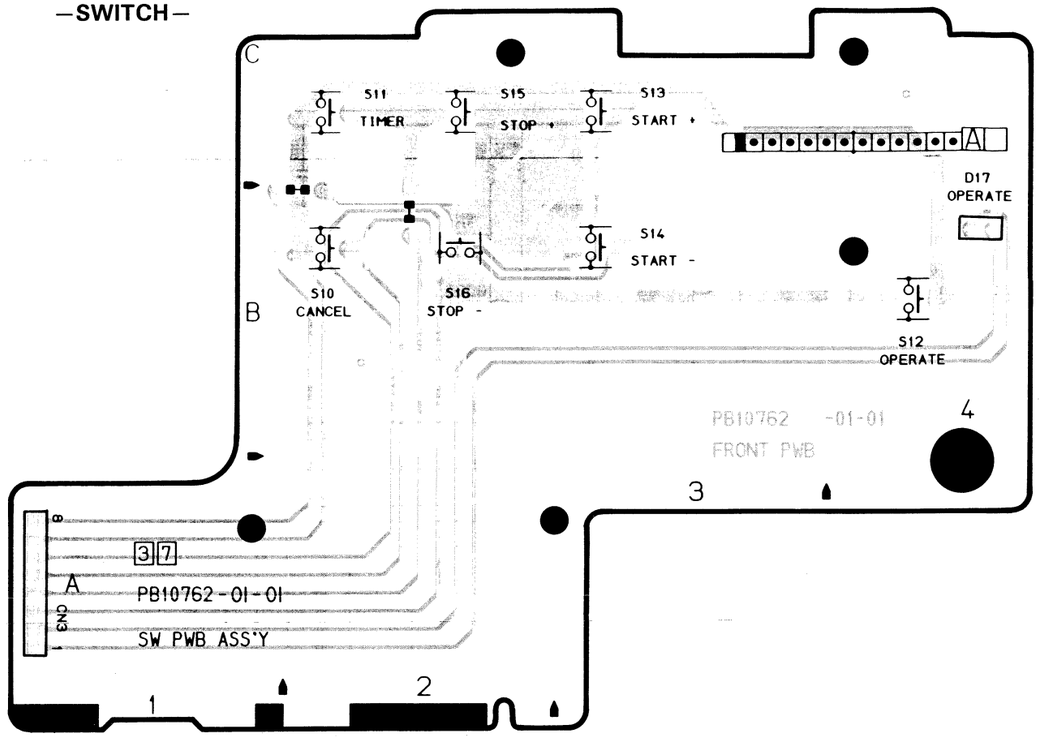
4.19 DISPLAY & SWITCH CIRCUIT BOARDS

—DISPLAY—

MAIN COMPONENT PARTS
LOCATION GUIDE
<DISPLAY BOARD>

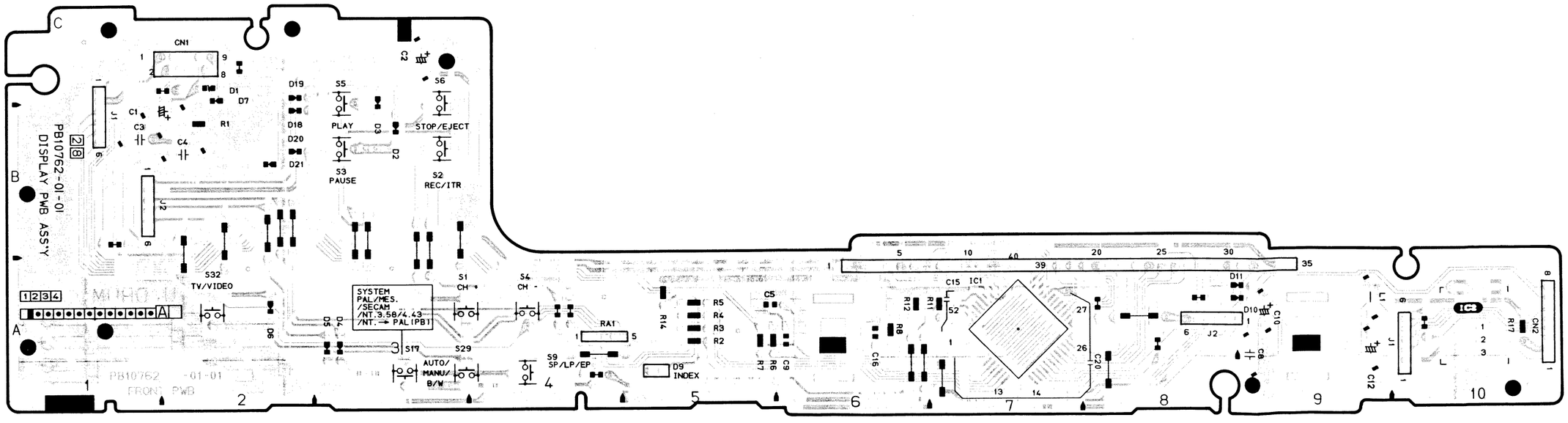
REF. No.	LOCATION
IC	
IC1	7A
IC2	10A
DIODE	
D1	2C
D2	3B
D3	3B
D4	3A
D5	3A
D6	2A
D7	2C
D9	5A
D10	9A
D11	8A
CONNECTOR	
CN1	2C
CN2	10A

—SWITCH—

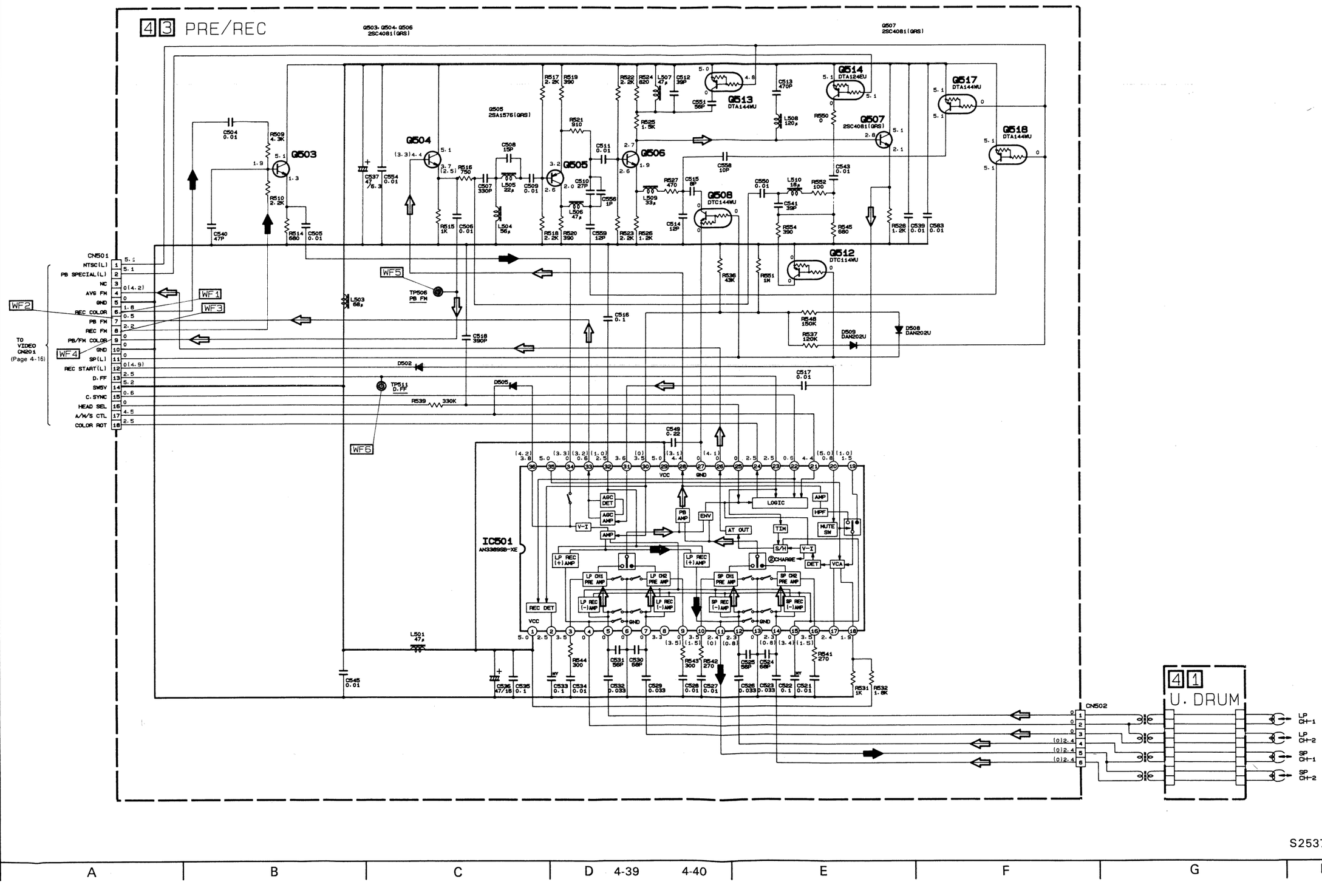


MAIN COMPONENT PARTS
LOCATION GUIDE
<SW BOARD>

REF. No.	LOCATION
DIODE	
D17	4B
CONNECTOR	
CN3	1A

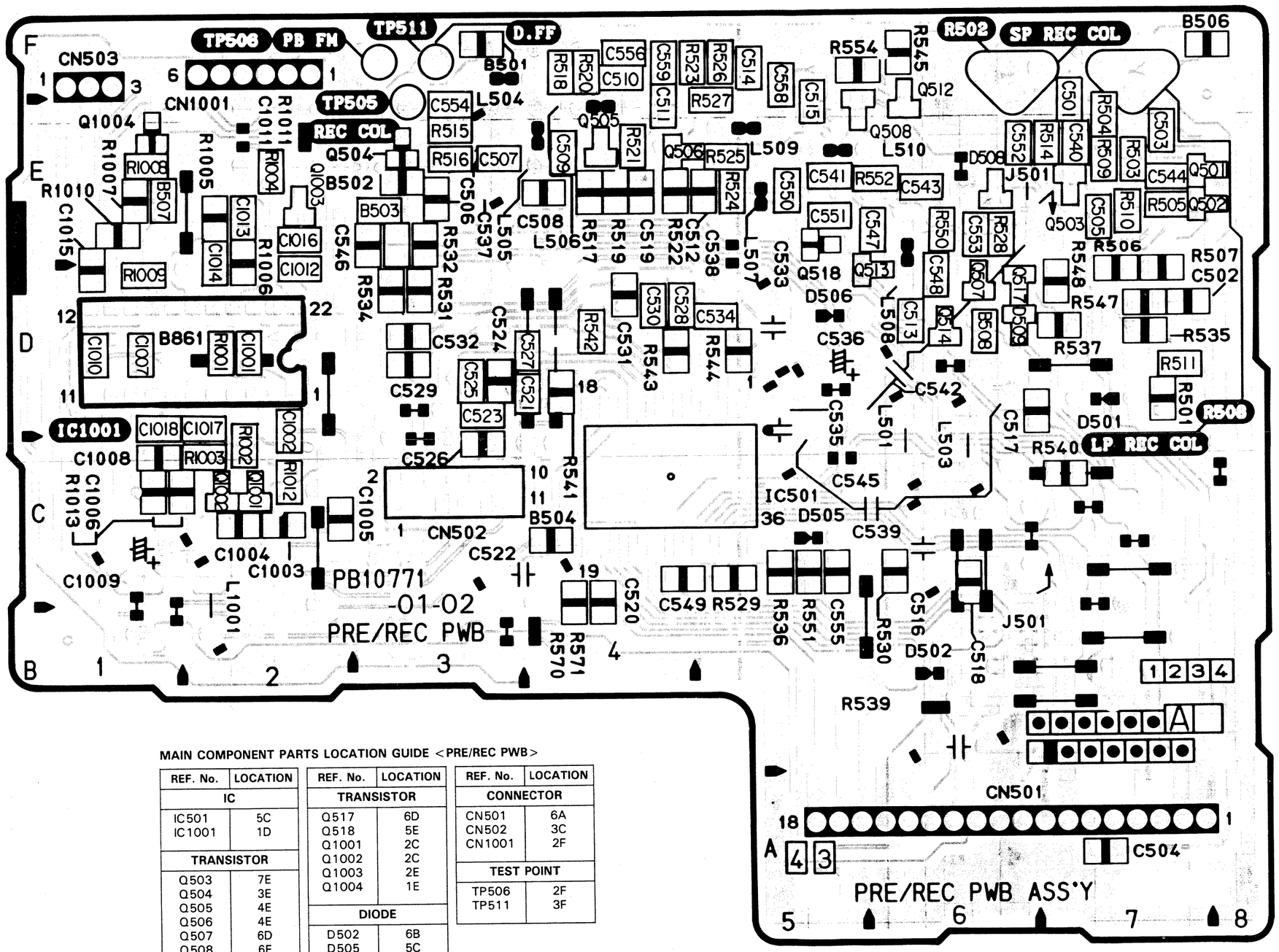


4.20 PRE/REC SCHEMATIC DIAGRAM



S25374

4.21 PRE/REC CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE <PRE/REC PWB>

REF. No.	LOCATION
IC	
IC501	5C
IC1001	1D
TRANSISTOR	
Q503	7E
Q504	3E
Q505	4E
Q506	4E
Q507	6D
Q508	6E
Q512	6E
Q513	6D
Q514	6D

REF. No.	LOCATION
TRANSISTOR	
Q517	6D
Q518	5E
Q1001	2C
Q1002	2C
Q1003	2E
Q1004	1E
DIODE	
D502	6B
D505	5C
D506	5D
D508	6E
D509	6D

REF. No.	LOCATION
CONNECTOR	
CN501	6A
CN502	3C
CN1001	2F
TEST POINT	
TP506	2F
TP511	3F

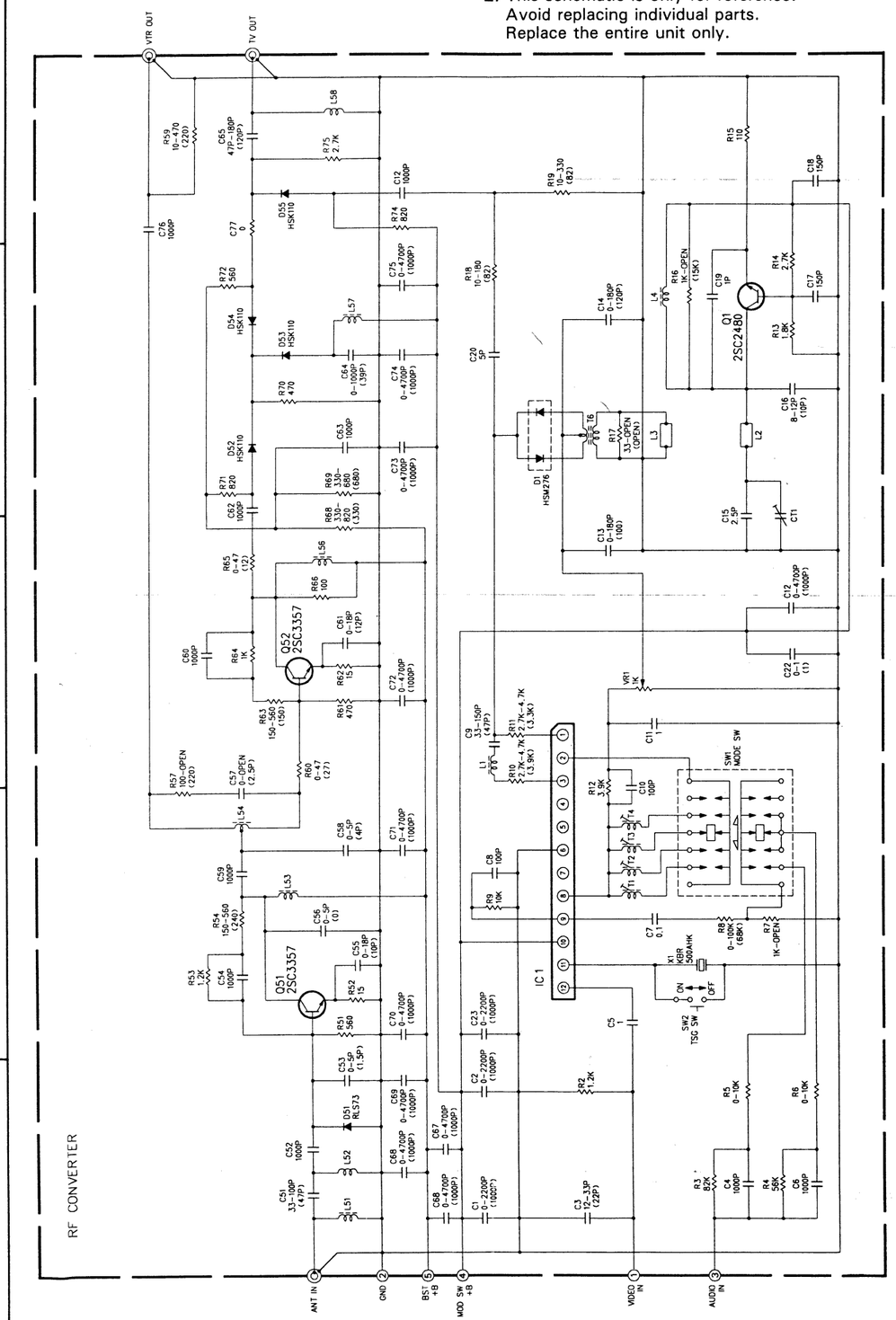
LEADLESS COMPONENT PARTS LOCATION GUIDE <PRE/REC PWB>

REF. No.	LOCATION
TRANSISTOR	
Q501	7E
Q502	7E
Q503	7E
Q504	3E
Q505	4E
Q506	4E
Q507	6D
Q508	6E
Q512	6E
Q513	6D
Q514	6D
Q517	6D
Q518	5E
Q1001	2C
Q1002	2C
Q1003	2E
Q1004	1E
DIODE	
D508	6E
D509	6D
RESISTOR	
R501	7D
R503	7E
R504	7E
R505	7E
R506	7E
R507	7E
R509	7E
R510	7E
R511	7D
R514	7E
R515	3E
R516	3E
R517	4E
R518	4F
R519	4E
R520	4F
R521	4E
R522	4E
R523	5F
R524	5E
R525	5E
R526	5F
R527	5E
R528	6E
R529	5C
R530	6C
R531	3D
R532	3E
R533	3E
R534	3D
R535	7D
R536	5C
R537	7D
R540	7C
R541	4D
R542	4D
R543	4D
R544	5D
R545	6F
R547	7D
R548	7D
R550	6E
R551	6C
R552	6E
R554	6F
R571	4B
R1001	2D
R1002	2C
R1003	2C
R1004	2E
R1005	2E
R1006	2D
R1007	1E
R1008	1E
R1009	1D
R1010	1E
R1012	2C
R1013	1C

REF. No.	LOCATION
CAPACITOR	
C501	7E
C502	7D
C503	7E
C504	7A
C505	7E
C506	3E
C507	3E
C508	4E
C509	4E
C510	4F
C511	4E
C512	5E
C513	6D
C514	5F
C515	5E
C517	6D
C518	6C
C519	4E
C520	4C
C521	4D
C523	3D
C524	3D
C525	3D
C526	3C
C527	4D
C528	4D
C529	4D
C530	4D
C531	4D
C532	3D
C534	5D
C540	7E
C541	5E
C543	6E
C544	7E
C546	3F
C547	6E
C548	6D
C549	4C
C550	5E
C551	5E
C552	6E
C553	6E
C554	3E
C555	5C
C556	4F
C558	5F
C559	4F
C1001	2D
C1002	2C
C1003	2C
C1004	2C
C1005	2C
C1006	1C
C1007	1D
C1008	1C
C1010	1D
C1012	2D
C1013	2E
C1014	2E
C1015	1E
C1016	2E
C1017	2D
C1018	1B

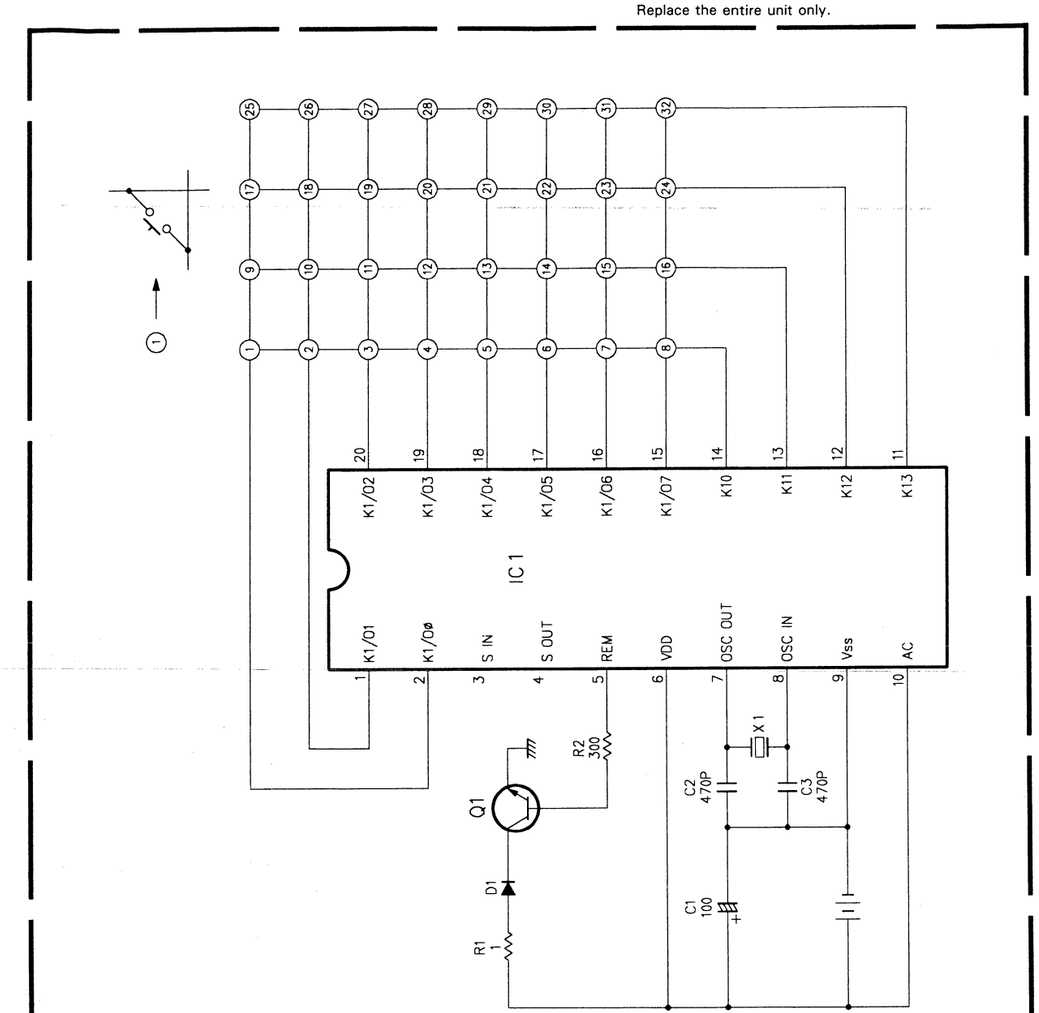
4.22 RF CONVERTER SCHEMATIC DIAGRAM

Notes:
1. All parts slown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.



4.23 REMOTE CONTROL SCHEMATIC DIAGRAM

Notes:
1. All parts slown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.



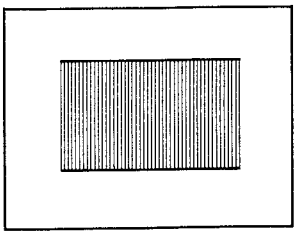
REMOTE CONTROLLER

KEY NO.	FUNCTION
1	1
2	4
3	7
4	TIMER
5	REW
6	STOP
7	SEARCH <<
8	SP/EP
9	2
10	5
11	8
12	0/AUX
13	TV
14	PAUSE
15	SEARCH >>
16	DISPLAY
17	3
18	6
19	9
20	ENTER/SELECT
21	FF
22	TV/VIDEO
23	POWER
24	A MONITOR
25	CANCEL/SKIP
26	MENU
27	C MEMORY/ADD
28	SELECT
29	REC
30	PLAY
31	CH ↑
32	CH ↓
29+30	REC START
29+14	REC PAUSE
13+23	TV POWER
13+31	TV CH ↑
13+32	TV CH ↓
13+22	TV/VIDEO (TV)
13+7	TV VOL ↑
13+15	TV VOL ↓
13+8	TV MAIN/SUB
13+16	ON SCREEN
13+24	TV MUTE

4.24 WAVEFORMS

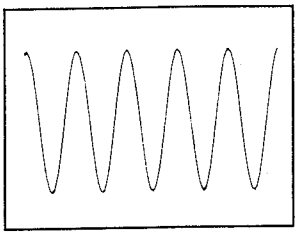
—AUDIO—

WF1 TP33 ERASE



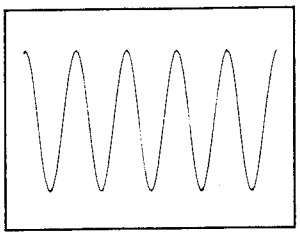
REC 35.0 Vp-p

WF2 PB AUDIO



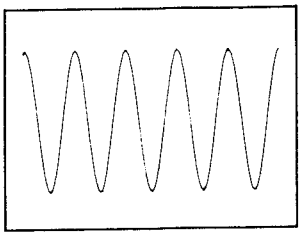
PB 0.27 Vp-p

WF3 AUX



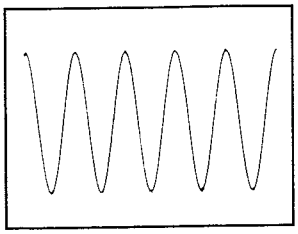
REC 0.64 Vp-p

WF4 TUNER AUDIO



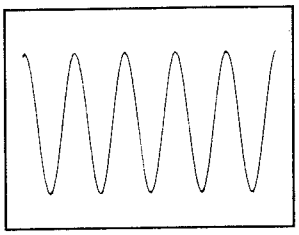
REC 0.52 Vp-p

WF5 RF OUT



REC 3.4 Vp-p
PB 3.8 Vp-p

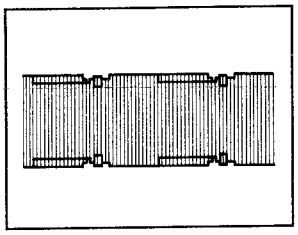
WF6 REC AUDIO



REC 4.2 Vp-p

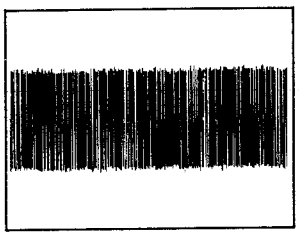
—VIDEO—

WF1 REC FM



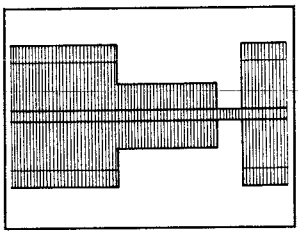
REC 0.7 Vp-p

WF2 PB FM



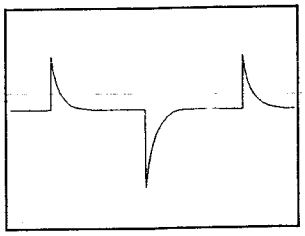
PB 0.4 Vp-p

WF3 REC COLOR



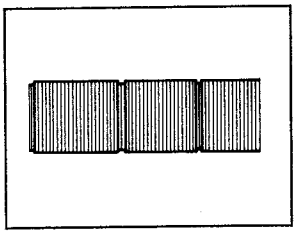
REC 0.2 Vp-p

WF4 TP244 MESECAM DET



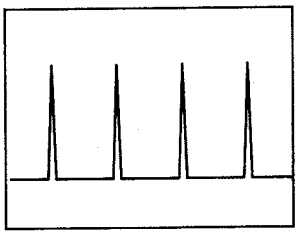
REC 2.0 Vp-p

WF5 PB COLOR



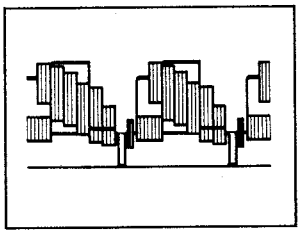
PB 0.5 Vp-p

WF6 TP212 C.SYNC



REC/PB 2 Vp-p

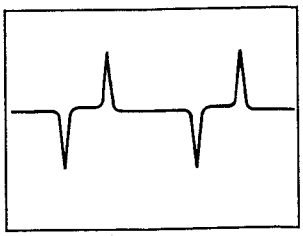
WF7 VIDEO IN



REC 2.0 Vp-p

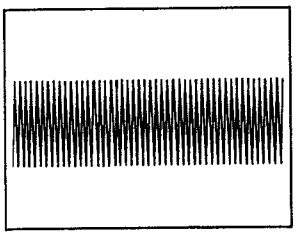
—SERVO—

WF1 TP401 CTL PULSE



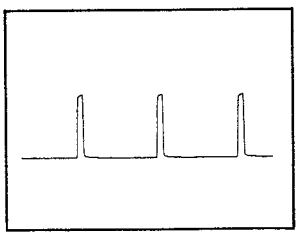
PB 2.5 Vp-p

WF2 CFG



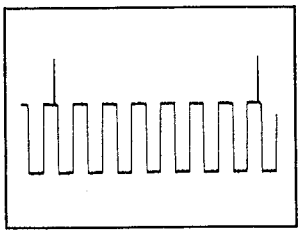
REC/PB 4.0 Vp-p

WF3 C.SYNC



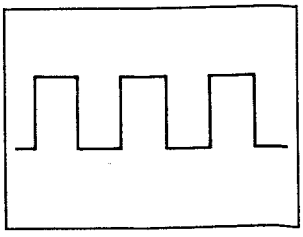
REC 4.0 Vp-p

WF4 D. PG/FG



PB 4.2 Vp-p

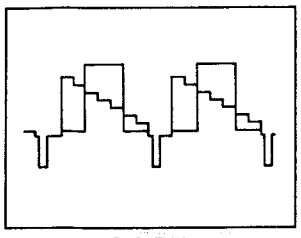
WF5 TP411 D. FF



REC/PB 0.6 Vp-p

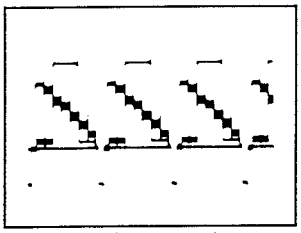
—VIDEO UNIT—

WF1



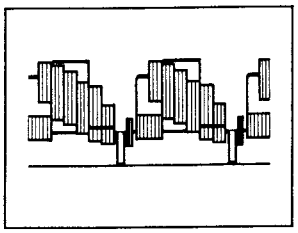
REC 0.5 Vp-p

WF2



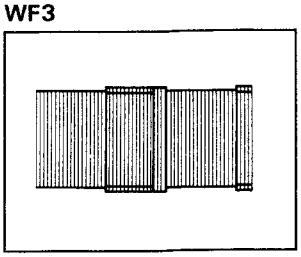
PB 0.13 Vp-p

WF3



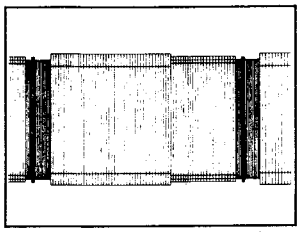
REC 1.1 Vp-p

WF3



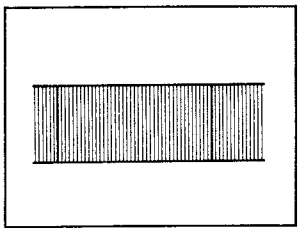
PB 1.0 Vp-p

WF4



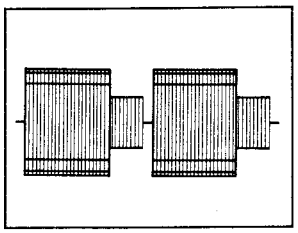
REC 1.4 Vp-p

WF5



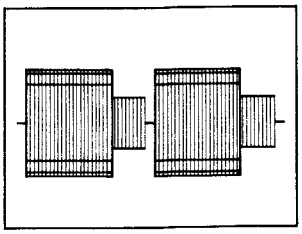
PB 0.34 Vp-p

WF6



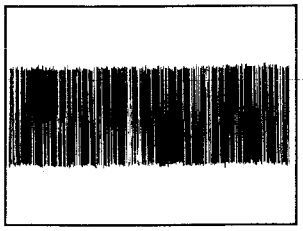
REC 0.4 Vp-p

WF7



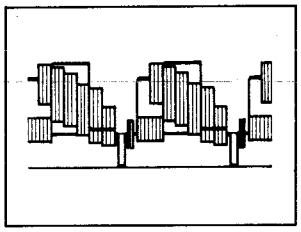
PB 0.12 Vp-p

WF8



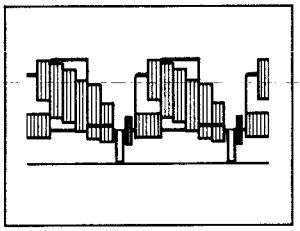
REC 0.02 Vp-p

WF9



REC 1.0 Vp-p

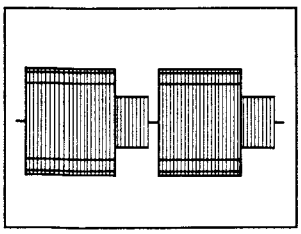
WF10 VIDEO OUT



REC/PB 2.3 Vp-p

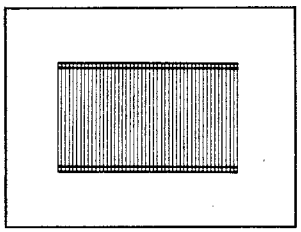
—PRE/REC—

WF1 REC COLOR



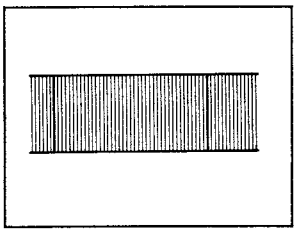
REC 0.22 Vp-p

WF2 PB FM



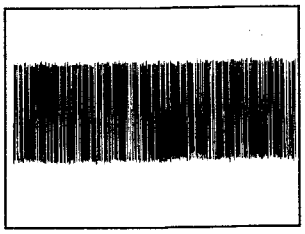
PB 0.5 Vp-p

WF3 REC FM



REC 0.7 Vp-p

WF4 PB/FM COLOR

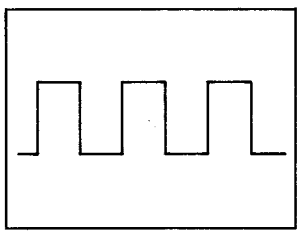


PB 0.6 Vp-p

WF5 TP506 PB FM

PB 0.6 Vp-p

WF6 TP511 D.FF



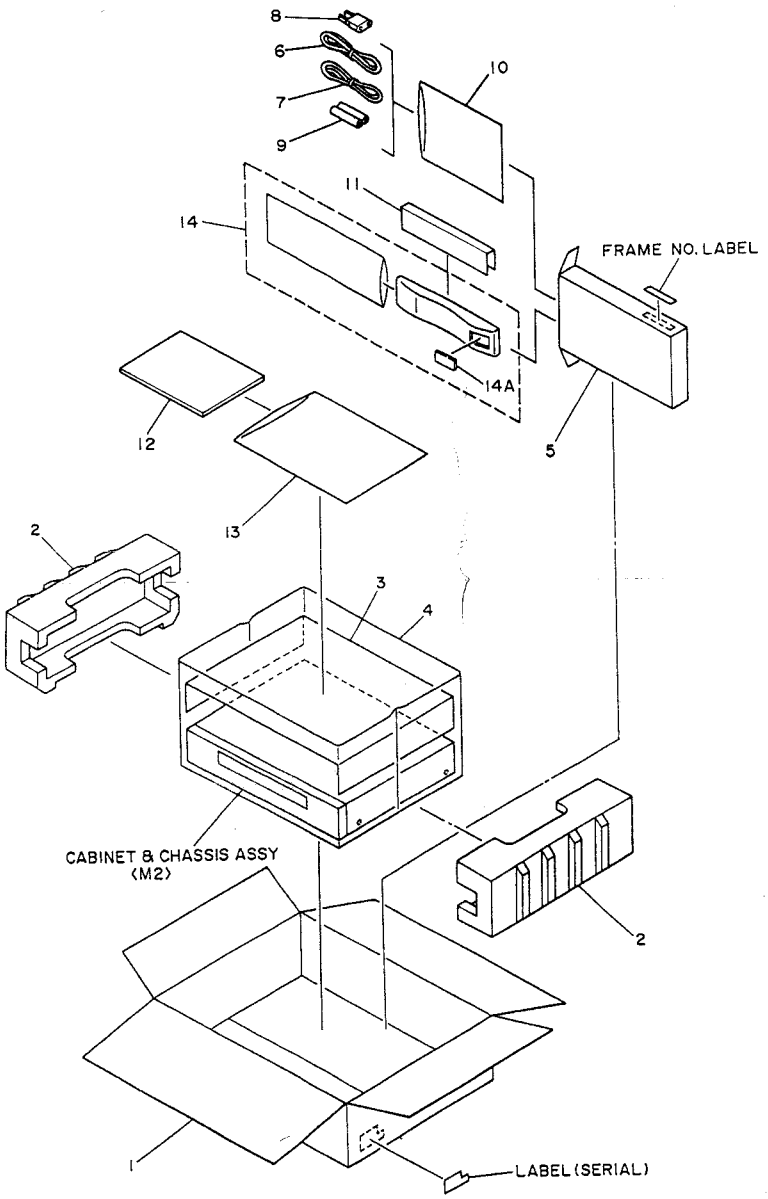
REC/PB 6.0 Vp-p

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

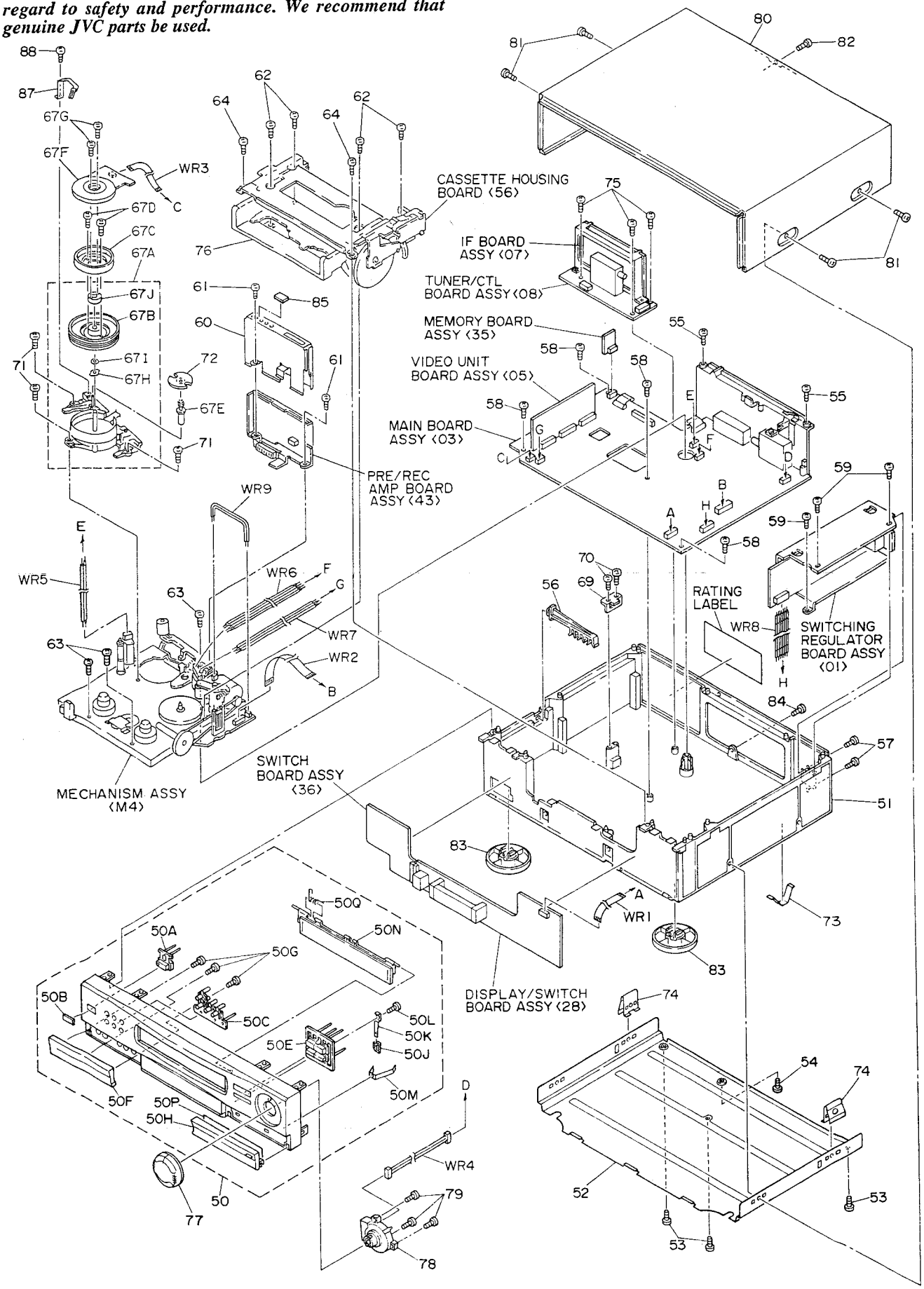


#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
			**********
			PACKING AND ACCESSORY ASSEMBLY <M1>
	1	PQ34868-9	PACKING CASE
	2	PQ34775A-1	CUSHION ASSEMBLY
	3	PQ34189-7	SHEET
	4	PQM30021-59-11	POLY BAG
	5	PQ34715-3	CASE(ACCESSORY)
⚠	6	PU59168-3	RF CABLE
⚠	7	QMP40E0-183	POWER CORD,HR-J407MS/A
⚠		QMP73F0-183	POWER CORD,HR-J407MS
⚠	8	PEMC1012	CONVERSION PLUG,HR-J407MS
	9	UM-4NJ2P	BATTERY,X2
	10	QPGA020-02005	POLY BAG
	11	PQ34834-3	SHEET
⚠	12	PU30425-1435	INSTRUCTIONS
	13	QPGA025-03505	POLY BAG
⚠	14	PQ21206Q	REMOTE CONTROLLER
	14A	PQ33885	CAP(BATTERY)

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

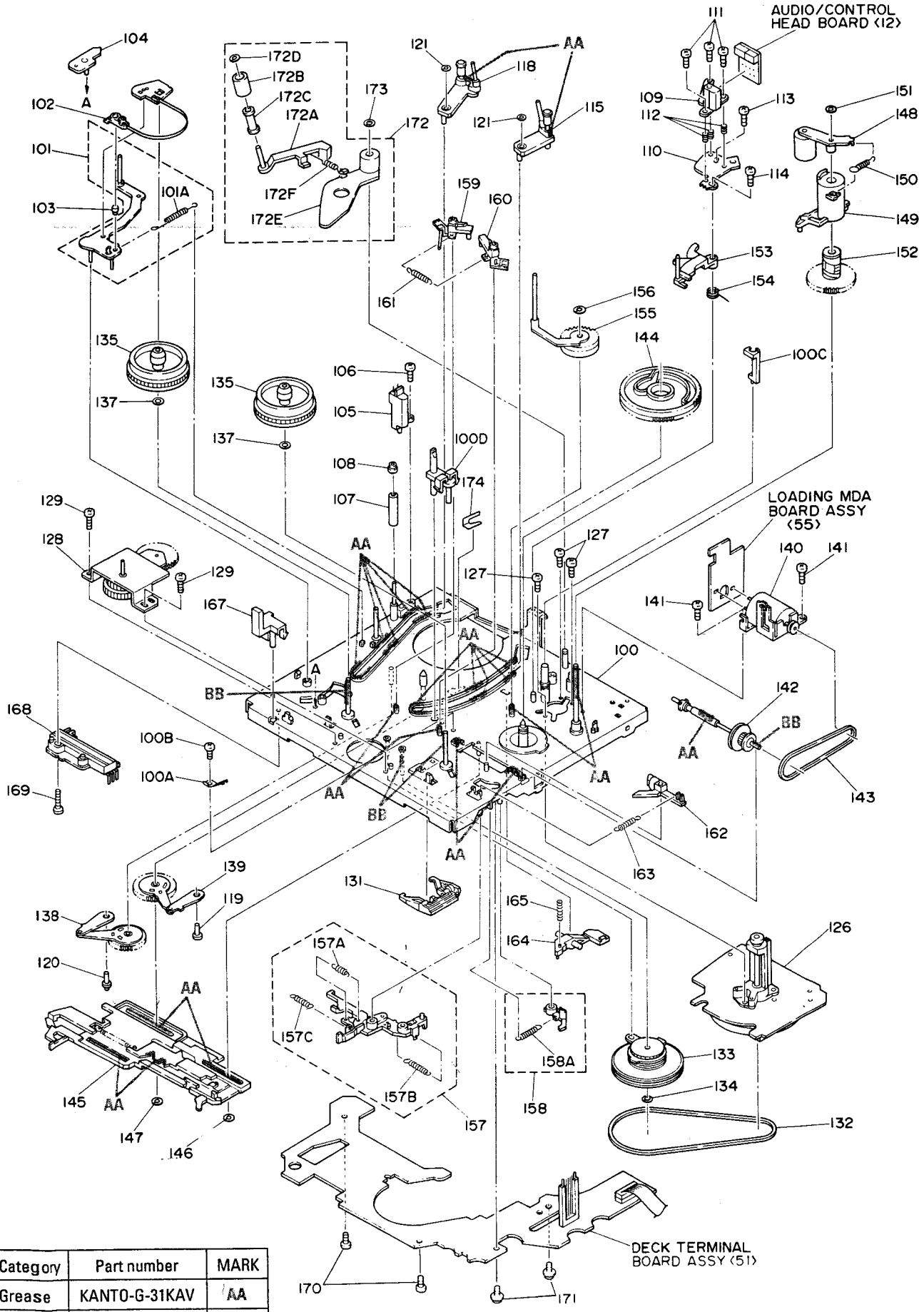
****

CABINET AND CHASSIS ASSEMBLY <M2>

	50	PQ11531T-12	FRONT PANEL ASSY
	50A	PQ34725-3	BUTTON(POWER)
	50B	PQ46050	INDICATOR
	50C	PQ21549-4	BUTTON(1)
	50E	PQ21559-3	BUTTON(OPE)
	50F	PQ21584-3-4	COVER
	50G	SDSF2008Z	SCREW,X3 COVER
	50H	PQ21548-11-7	DOOR(R)
	50J	PQ46167	SPRING(2)
	50K	PQ46166-1-2	SPRING(1)
	50L	SDSF2005Z	SCREW
	50M	PQ34736	EARTH PLATE
	50N	PQ21560-9-5	C.H.DOOR
	50P	PQ34735-3	PLATE(DOOR R)
	50Q	PQ45704	TORSION SPRING
⚠	51	PQ11548-1-5	BOTTOM CHASSIS
⚠	52	PQ11556-1-3	BOTTOM COVER
	53	SDSF3010Z	SCREW,X3 BOTTOM COVER
	54	SDSF3006Z	SCREW,BOTTOM COVER
	55	SDSF3008Z	SCREW,X2 TERMINAL BOARD
	56	PQ34776	PWB HOLDER,VIDEO UNIT
	57	SDSF3010M	SCREW,X2 INLET
	58	SDSF3008Z	SCREW,X4 MAIN
	59	SDSF3008Z	SCREW,X3 SW REG
	60	PQ21513-1-1	SHIELD CASE,PRE
	61	SDSG2606Z	SCREW,X2 PRE
	62	SDST2608Z	SCREW,X4 CASSETTE HOUSING
	63	PQ43831	SPECIAL SCREW,X3 MECHA
	64	SDSF3008Z	SCREW,X2 MECHA
	67A	PDM2232J	DRUM SUB ASSY
	67B	PDM3353J	UPPER DRUM ASSY
	67C	PDZ0119-6	ROTOR ASSY
	67D	SPSH2660Z	SCREW,X2
	67E	PDM4311A-1	ROLLER ASSEMBLY
⚠	67F	PDZ0119-5	STATOR ASSEMBLY
	67G	SPSP2606Z	SCREW,X2
	67H	PDM4314A-2	BRUSH ASSEMBLY
	67I	PDM4050-9	WASHER
	67J	PDM4345A	COLLAR ASSEMBLY
	69	PQ46100	BRACKET MECHA
	70	SDSF3008Z	SCREW,X2 BRACKET
	71	SPST2610Z	SCREW,X3
	72	PQ44230	INERTIA PLATE
	73	PQ34737	EARTH PLATE,REG
	74	PQ46135	EARTH PLATE,X2 TOP BOTTOM
	75	SDSF3008Z	SCREW,X3 TUNER
	76	PUS29672A-2	CASSETTE HOUSING ASSY
	77	PQ34862C-5	KNOB(SHUTTLE)AY
	78	PEME0913	SHUTTLE ASSEMBLY
	79	SDSF2610Z	SCREW,X3 SHUTTLE
⚠	80	PQ11550-2	TOP COVER

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	81	PQ43827	SPECIAL SCREW,X4 TOP COVER
	82	SDSF3010M	SCREW,TOP COVER
	83	PQ46094A-2	FOOT ASSEMBLY,X2
	84	SDSF3010M	SCREW,TERMINAL BOARD
	85	PQM30029-27	SPACER,PRE/REC
	87	PDM3370	EARTH PLATE,DRUM
	88	SPSG2606Z	SCREW,EARTH PLATE
	WR1	PW30802-0918	FFC WIRE,CN602-M
	WR2	PW30802-1626	FFC WIRE,CN601-M
	WR3	PW30803-0440	FFC WIRE,CN402-M
	WR4	PW30218-0444014	WIRE,CN603-M
	WR5	PW30701-24AAYY	WIRE,CN2-M
	WR6	PW30705-14AAYY	WIRE,CN1-M
	WR7	PW30702-50AAYY	WIRE,CN401-M
	WR8	PW30604-09922	WIRE,CN802-M
	WR9	PW30101-A0HH884	WIRE,CN1-MDA

5.3 MECHANISM ASSEMBLY <M4>



Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

MECHANISM ASSEMBLY <M4>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
100	PQ20753J-19	MAIN DECK ASSEMBLY
100A	PQ43849	EARTH PLATE
100B	SPST2604Z	SCREW
100C	PQ43675-2	TAPE GUARD
100D	PQ21546	LED PRISM
101	PQ43497J	TENSION ARM ASSY
101A	PQ43500	TENSION SPRING
102	PQ43501B-12	TENSION BAND ASSY
103	PQ43503-1-4	ADJUST PIN
104	PQ44246	T.BAND BKT-3
105	PEHE0237	FULL ERASE HEAD
106	SDSF2614Z	SCREW,F E HEAD
107	PQ43505-1-1	ROLLER
108	PQ43506	GUIDE POLE CAP
109	PEHE0247	AC HEAD
110	PQ43509	HEAD BASE
111	PQ43687A	SPECIAL SCREW,X3
112	PQM30002-192	COMPRESSION SPRING,X3
113	SPSF2608M	SCREW
114	SPSP2606Z	SCREW
115	PU61103-2-7	POLE BASE ASSY(TAKE UP)
118	PU61151-2-6	POLE BASE ASSY(SUPPLY)
119	PQ45895	STOPPER(T)
120	PQ45894	STOPPER(S)
121	PQM30017-41	SLIT WASHER,X2
⚠ 126	PU61285	CAPSTAN MOTOR
127	SPSG2608Z	SCREW,X3
128	PU60618-1-3	IDLER GEAR UNIT
129	SPST2606Z	SCREW,X2
131	PQ43532B	CHANGE LEVER ASSY
132	PQM30003-24	BELT
133	PU60953-1-6	CLUTCH UNIT
134	PQM30017-8	SLIT WASHER
135	PQ46072A	REEL DISK ASSY,X2
137	PQM30018-54	SPACER,X2
138	PQ43537B	LOADING ARM ASSY (SUPLLY)
139	PQ43542D-4	LOADING ARM AY (TAKE-UP)
140	PQ43676B-5	MODE MOTOR ASSY
141	SPSP3003Z	SCREW,X2
142	PQ43548A-2	WORM CLUTH ASSY
143	PQM30003-23	BELT
144	PQ32413-1-6	CONTROL CAM
145	PQ43555C-10	PLATE ASSY
146	PQM30017-12	SLIT WASHER
147	PQM30017-8	SLIT WASHER
148	PQ43558E	PINCH ROLLER ARM ASSY
149	PQ32415	PINCH ROLLER PRESS LEVER
150	PQM30001-233	TENSION SPRING
151	PQM30017-12	SLIT WASHER
152	PQ32416-2	PINCH ROLLER CAM
153	PQ43567A-13	GUIDE ARM ASSY
154	PQ43569-1-3	TORSION SPRING
155	PQ43570B	HALE LOADING GEAR ASSY

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
156	PQM30017-12	SLIT WASHER
157	PQ43575A-5	CANCEL LEVER ASSY
157A	PQM30001-273	TENSION SPRING
157B	PQM30001-237	TENSION SPRING
157C	PQM30001-274	TENSION SPRING
158	PQ43578A-2	HOOK ASSY
158A	PQM30001-238	TENSION SPRING
159	PQ43580D	MAIN BRAKE ASSY (SUPPLY)
160	PQ43582C	MAIN BRAKE ASSY (TAKE UP)
161	PQM30001-251	TENSION SPRING
162	PQ43583A-3	SUB BRAKE ASSY (TAKE UP)
163	PQM30001-235	TENSION SPRING
164	PQ43584A-5	CAPSTAN BRAKE ASSY
165	PQM30002-201	COMPRESSION SPRING
167	PU60624-1-4	REC SAFETY SWITCH
168	PU60622-1-2	SLIDE SWITCH
169	SDSF2614Z	SCREW
170	SDST2616Z	SCREW,X2
171	GPSF2608Z	SCREW,X2
172	PQ46016B-3	CLEANER ASSY
172A	PQ34678	CLEANER BASE
172B	PQ46019	CLEANER
172C	PQ46018	CLEANER ROLLER
172D	PQM30017-38	SLIT WASHER
172E	PQ34677-1-3	CLEANER LEVER
172F	PQ46155-1-2	TORSION SPRING
173	PQM30017-32	SLIT WASHER
174	PQ46173	LOADING GUIDE 3

5.4 ELECTRICAL PARTS LIST

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
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SWITCHING REGULATOR BOARD ASSY <01>

	PWBA1	PB20633A-02	SWITCH REGULATOR BOARD ASSY
	Q1	2SK2043-CB14	FE TRANSISTOR
	Q2	2SC3616(LK)	TRANSISTOR
	Q31	2SC1740S(RS)	TRANSISTOR
	D1	10E6-F2	DIODE
	D2	10E6-F2	DIODE
	D3	10E6-F2	DIODE
	D4	10E6-F2	DIODE
	D5	AU01	FR DIODE
	D6	AU01	FR DIODE
	D7	1SS133	DIODE
	D8	RD27ES-T1B2	DIODE
	D9	1SS133	DIODE
	D10	RD6.2ES-T1B1	ZENER DIODE
	D31	1SR153-400-T2	FR DIODE
	D32	AU01Z	FR DIODE
	D34	FML-12S	FR DIODE
	D36	FMB-24	BARRIER DIODE
	D37	AU01Z	FR DIODE
	D38	RD5.6ES-T1B2	ZENER DIODE
	D39	MTZ30AT-77	ZENER DIODE
	D40	RD36ES-T1B2	ZENER DIODE
	R2	QRD161J-334	RESISTOR 330KΩ,1/6W
	R3	QRD161J-334	RESISTOR 330KΩ,1/6W
	R4	QRG029J-104G	OMF RESISTOR 100KΩ,2W
	R5	QRD161J-102	RESISTOR 1KΩ,1/6W
	R6	QRD161J-333	RESISTOR 33KΩ,1/6W
	R7	QRX014J-R33Z	MF RESISTOR 0.33Ω,1W
	R8	QRG029J-201G	OMF RESISTOR 200Ω,2W
	R9	QRD161J-472	RESISTOR 4.7KΩ,1/6W
	R11	QRD161J-222	RESISTOR 2.2KΩ,1/6W
	R12	QRD161J-102	RESISTOR 1KΩ,1/6W
	R13	QRD161J-184	RESISTOR 180KΩ,1/6W
	R15	QRG029J-104G	OMF RESISTOR 100KΩ,2W
	R31	QRX014J-4R7Z	MF RESISTOR 4.7Ω,1W
	R32	QRG02DJ-222X	OMF RESISTOR 2.2KΩ,2W
⚠	R33	QRZ0077-470X	FUSIBLE RESISTOR 47Ω,1/4W
	R34	QRD161J-561	RESISTOR 560Ω,1/6W
	R35	QRD161J-561	RESISTOR 560Ω,1/6W
	R36	QRD161J-101	RESISTOR 100Ω,1/6W
	R37	QRD161J-222	RESISTOR 2.2KΩ,1/6W
⚠	C1	QFZ9022-223	F CAPACITOR 0.022μF
⚠	C7	QCZ9026-102	CAPACITOR 0.001μF
⚠	C8	QCZ9016-221K	CAPACITOR 220pF
⚠	C9	QCZ9016-221K	CAPACITOR 220pF
	C10	PECA0793-826	E CAPACITOR 82μF
	C12	QETC1HM-225	E CAPACITOR 2.2μF,50V
	C13	QCZ0212-472	CAPACITOR 0.0047μF,1KV
	C15	QFV11HJ-683	F CAPACITOR 0.068μF,50V
	C16	QFLA1HJ-822Z	M CAPACITOR 0.0082μF,50V
	C17	QCBB1HJ-101	CAPACITOR 100pF,50V
	C19	QCBB1HJ-471	CAPACITOR 470pF,50V
	C22	QCZ9026-101	CAPACITOR 100pF
	C31	QEGB1AM-107	E CAPACITOR 100μF,10V
	C32	QETC1JM-226	E CAPACITOR 22μF,63V
	C33	QFLA1HJ-103Z	M CAPACITOR 0.01μF,50V
	C36	QEGB1CM-687	E CAPACITOR 680μF,16V
	C37	QETB1CM-108	E CAPACITOR 1000μF,16V
	C38	QEGB1AM-108	E CAPACITOR 1000μF,10V
	C39	QETB1AM-108	E CAPACITOR 1000μF,10V
	C40	QETC1HM-226	E CAPACITOR 22μF,50V
	C41	QFV11HJ-334	F CAPACITOR 0.33μF,50V
	C42	QFN31HJ-103	M CAPACITOR 0.01μF,50V
	C44	QEGB1AM-107	E CAPACITOR 100μF,10V
	L32	PELN0628-330KZ	COIL 33μH
	L33	PELN0628-330KZ	COIL 33μH
⚠	PC1	PS2561L-1(WL)	PH COUPLER
⚠	T1	PELN0890	SW TRANS
⚠	AO1	PEMC0973-03	AC INLET
⚠	BKT1	PQ21566-1-1	TRANS BRACKET
⚠	FC1	PEMC0965-Z	FUSE CLIP,FOR F1
⚠	FC2	PEMC0965-Z	FUSE CLIP,FOR F1
⚠	HS1	PQ44610-1-2	HEAT SINK,FOR Q1
⚠	HS2	PQ46005	HEAT SINK(1)FOR D34,D36
⚠	LF1	PU59707	LINE FILTER
	SCW1	SDST3006Z	SCREW,X3 T BOARD-T BRACKET
	SCW2	SDSG3008Z	SCREW,HEAT SINK
	SCW3	SDSG3006Z	SCREW,HEAT SINK
	SCW4	SDSG3008Z	SCREW,X2 HEAT SINK(1)
	SCW5	SDSG3006Z	SCREW,HEAT SINK(1)
	CN1	PU60910-109	CONNECTOR,(2-10) MAIN
⚠	F1	QMF51E2-1R6	FUSE T1.6A

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MAIN BOARD ASSEMBLY <03>

	PWBA1	PB10735E1	MAIN BOARD ASSY
⚠	RF1	PERF0152	RF CONVERTER
⚠	TB1	PQ11571-5	TERMINAL BOARD
	CL1	PU56729-2	WIRE CLAMP,X2
	ETH1	PQ46115	EARTH PLATE,TERM BOARD
	ETH2	PQ46116	EARTH PLATE,TERM BOARD
	J4	PW30603-04424	RIBBON WIRE,(1-4)
	J6	PW30603-09914	WIRE,(1-9)
	SCW1	SDST2605Z	SCREW,RF CONVERTOR
	SCW2	SDSF3008Z	SCREW,TERM BOARD
	SPC1	PU60010-2	SPACER
	WR1	PW30401-BB20T	COAXIAL CORD,CONV-TU
	J201	PW30343-0211802	WIRE
	J801	PW30219-06608	WIRE,(1-6)
	J802	PW30219-03330	WIRE,(1-3)
	CN1	PU60910-4	CONNECTOR,(1-4) A/C HEAD
	CN2	PU60910-2	CONNECTOR,(1-2) FE HEAD
	CN201	PEMC0975-018	B TO B CONNECTOR,(1-18)PRE/REC
	CN401	PU60910-3	CONNECTOR,(1-3) CTL HEAD
	CN402	PEMC0915-004	FFC CONNECTOR,(1-4) DRUM MOTOR
	CN601	PEMC0916-016	FFC CONNECTOR,(1-16) DECK TERM
	CN602	PEMC0916-009	FFC CONNECTOR,(1-9) SW/DISPLAY
	CN603	PU59555-4	CONNECTOR,(1-4) SHUTTLE
	CN605	PEMC0846-010	B TO B CONNECTOR,(1-10) TU CTL
	CN606	PEMC0846-010	B TO B CONNECTOR,(1-10) TU CTL
	CN607	PEMC0714-005	CONNECTOR,(1-5) MEMORY
	CN802	PU60910-9	WIRE TRAP,(2-10) SW REG

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
		– AUDIO SECTION –	
	IC1	XRA7795LS	IC
		or BA7795LS	IC
	Q1	2SC4081(QR)	TRANSISTOR
	Q2	2SA933S(QR)	TRANSISTOR
	Q5	2SA933S(QR)	TRANSISTOR
	Q7	DTC144WU	TRANSISTOR
	Q8	DTC144WU	TRANSISTOR
	Q9	DTC144WU	TRANSISTOR
	Q10	DTC144WU	TRANSISTOR
	D1	DAN202U	DIODE
	R1	QRSA08J-100YN	RESISTOR 10Ω,1/10W
	R2	QRSA08J-393YN	RESISTOR 39KΩ,1/10W
	R3	QRSA08J-682YN	RESISTOR 6.8KΩ,1/10W
	R4	QRSA08J-103YN	RESISTOR 10KΩ,1/10W
	R5	QRSA08J-123YN	RESISTOR 12KΩ,1/10W
	R6	QRSA08J-3R3YN	RESISTOR 3.3Ω,1/10W
	R7	QRSA08J-473YN	RESISTOR 47KΩ,1/10W
	R8	QRSA08J-183YN	RESISTOR 18KΩ,1/10W
	R13	QRSA08J-473YN	RESISTOR 47KΩ,1/10W
	R14	QRSA08J-273YN	RESISTOR 27KΩ,1/10W
	R16	QRSA08J-223YN	RESISTOR 22KΩ,1/10W
	R17	QRSA08J-820YN	RESISTOR 82Ω,1/10W
	R18	QRSA08J-274YN	RESISTOR 270KΩ,1/10W
	R19	QRSA08J-822YN	RESISTOR 8.2KΩ,1/10W
	R20	QRSA08J-682YN	RESISTOR 6.8KΩ,1/10W
	R21	QRSA08J-472YN	RESISTOR 4.7KΩ,1/10W
	R22	QRSA08J-682YN	RESISTOR 6.8KΩ,1/10W
	R23	QRSA08J-475YN	RESISTOR 4.7MΩ,1/10W
	R24	QRSA08J-183YN	RESISTOR 18KΩ,1/10W
	R25	QRSA08J-473YN	RESISTOR 47KΩ,1/10W
	R26	QRSA08J-153YN	RESISTOR 15KΩ,1/10W
	R27	QRSA08J-153YN	RESISTOR 15KΩ,1/10W
	R28	QRD161J-123	RESISTOR 12KΩ,1/6W
	R29	QRSA08J-103YN	RESISTOR 10KΩ,1/10W
	R32	QRSA08J-123YN	RESISTOR 12KΩ,1/10W
	R33	QRSA08J-562YN	RESISTOR 5.6KΩ,1/10W
	R34	QRSA08J-122YN	RESISTOR 1.2KΩ,1/10W
	R35	QRSA08J-393YN	RESISTOR 39KΩ,1/10W
	R36	QRSA08J-681YN	RESISTOR 680Ω,1/10W
	R37	QRSA08J-153YN	RESISTOR 15KΩ,1/10W
	R38	QRSA08J-0R0Y	RESISTOR 0Ω,1/10W
	R39	QRSA08J-121YN	RESISTOR 120Ω,1/10W
	R41	QRSA08J-331YN	RESISTOR 330Ω,1/10W
	R42	QRSA08J-473YN	RESISTOR 47KΩ,1/10W
	R43	QRSA08J-473YN	RESISTOR 47KΩ,1/10W
	R46	QRSA08J-102YN	RESISTOR 1KΩ,1/10W
	R47	QRSA08J-102YN	RESISTOR 1KΩ,1/10W
	R56	QRSA08J-0R0Y	RESISTOR 0Ω,1/10W
	R70	QRSA08J-0R0Y	RESISTOR 0Ω,1/10W
⚠	R72	QRSA08J-221YN	RESISTOR 220Ω,1/10W
⚠	R73	QRSA08J-121YN	RESISTOR 120Ω,1/10W
	C1	QCYA1HK-331	CAPACITOR 330pF,50V
	C2	QFN31HJ-823	M CAPACITOR 0.082μF,50V
	C3	QETF1CM-106	E CAPACITOR 10μF,16V
	C4	QCYA1HK-472	CAPACITOR 0.0047μF,50V
	C5	QCYA1HK-223	CAPACITOR 0.022μF,50V
	C10	PU60550-475	E CAPACITOR 4.7μF
	C11	QCYA1HK-681	CAPACITOR 680pF,50V
	C12	QEKF1AM-226	E CAPACITOR 22μF,10V
	C13	QCYA1HK-123	CAPACITOR 0.012μF,50V
	C15	QCC11EJ-393	CAPACITOR 0.039μF,25V
	C16	QETF1AM-226	E CAPACITOR 22μF,10V
	C17	QEKF1HM-104	E CAPACITOR 0.1μF,50V
	C18	QETF1HM-104	E CAPACITOR 0.1μF,50V
	C19	QETF1HM-335	E CAPACITOR 3.3μF,50V
	C20	QCSA1HJ-222	CAPACITOR 0.0022μF,50V
	C21	QETF1CM-476	E CAPACITOR 47μF,16V
	C22	QETF1CM-106	E CAPACITOR 10μF,16V
	C23	QCC11EJ-562	CAPACITOR 0.0056μF,25V
	C24	QETF1HM-105	E CAPACITOR 1μF,50V
	C26	QCC11EJ-822	CAPACITOR 0.0082μF,25V
	C27	QCC11EJ-223	CAPACITOR 0.022μF,25V
	L2	PU58308-123J	COIL 12mH
⚠	T1	PELN0832	OSC TRANSFORMER
		– VIDEO SECTION –	
	IC201	BA7106LS	IC
		or XRA7106LS	IC
	IC202	NJM2234S	IC
		or LVA522S	IC
		or LVA522SA	IC
	IC203	BA7045	IC
	IC204	M50253P	IC
	Q201	2SC4081(RS)	TRANSISTOR
	Q202	2SC4081(RS)	TRANSISTOR
	Q205	2SC4081(RS)	TRANSISTOR
	Q207	2SA1576(RS)	TRANSISTOR
	Q208	2SC4081(RS)	TRANSISTOR
	Q209	2SA933S(RS)	TRANSISTOR
		or 2SA1267(YG)-TJK	TRANSISTOR
	Q210	2SA933S(RS)	TRANSISTOR
		or 2SA1267(YG)-TJK	TRANSISTOR
	Q211	2SC1740S(RS)	TRANSISTOR
		or 2SC3199(GB)	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
	Q212	DTA144WU	TRANSISTOR
	Q213	2SC4081(RS)	TRANSISTOR
	Q218	DTA114WU	TRANSISTOR
	D201	1SS133	DIODE
	D204	1SS133	DIODE
	D205	1SS133	DIODE
	D207	1SS133	DIODE
	R201	QRSA08J-562YN	RESISTOR 5.6KΩ,1/10W
	R202	QRSA08J-363YN	RESISTOR 36KΩ,1/10W
	R203	QRSA08J-562YN	RESISTOR 5.6KΩ,1/10W
	R204	QRSA08J-914YN	RESISTOR 910KΩ,1/10W
	R205	QRSA08J-821YN	RESISTOR 820Ω,1/10W
	R206	QRSA08J-471YN	RESISTOR 470Ω,1/10W
	R207	QRSA08J-104YN	RESISTOR 100KΩ,1/10W
	R208	QRSA08J-333YN	RESISTOR 33KΩ,1/10W
	R209	QRSA08J-273YN	RESISTOR 27KΩ,1/10W
	R210	QRSA08J-102YN	RESISTOR 1KΩ,1/10W
	R211	QRSA08J-271YN	RESISTOR 270Ω,1/10W
	R212	QRSA08J-271YN	RESISTOR 270Ω,1/10W
	R213	QRSA08J-102YN	RESISTOR 1KΩ,1/10W
	R214	QRSA08J-102YN	RESISTOR 1KΩ,1/10W
	R215	QRSA08J-271YN	RESISTOR 270Ω,1/10W
	R217	QRSA08J-363YN	RESISTOR 36KΩ,1/10W
	R220	QRSA08J-101YN	RESISTOR 100Ω,1/10W
	R221	QRSA08J-511YN	RESISTOR 510Ω,1/10W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R222	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R223	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R226	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R229	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R230	QRSA08J-274YN	RESISTOR	270KΩ,1/10W
R231	QRSA08J-753YN	RESISTOR	75KΩ,1/10W
R232	QRSA08J-392YN	RESISTOR	3.9KΩ,1/10W
R233	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R234	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R235	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R236	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
R237	QRSA08J-272YN	RESISTOR	2.7KΩ,1/10W
R238	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R239	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R240	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R241	QRD123J-391SX	RESISTOR	390Ω,1/2W
R242	QRD161J-123	RESISTOR	12KΩ,1/6W
R243	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R244	QRD161J-102	RESISTOR	1KΩ,1/6W
R245	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R246	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R247	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
R248	QRD161J-102	RESISTOR	1KΩ,1/6W
R249	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R252	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R262	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R263	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R264	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
C201	QEKF1CM-106	E CAPACITOR	10μF,16V
C202	QEKF1HM-335	E CAPACITOR	3.3μF,50V
C203	QCSA1HJ-471	CAPACITOR	470pF,50V
C204	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C205	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C206	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C207	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C208	QFN31HJ-471	M CAPACITOR	470pF,50V
C209	QCSA1HJ-270	CAPACITOR	27pF,50V
C210	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C212	QCSA1HJ-5R0	CAPACITOR	5pF,50V
C213	QETF0JM-107	E CAPACITOR	100μF,6.3V
C214	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C215	QETF0JM-476	E CAPACITOR	47μF,6.3V
C216	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C217	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C219	QCSA1HJ-330	CAPACITOR	33pF,50V
C220	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C221	QCSA1HJ-4R0	CAPACITOR	4pF,50V
C222	QCSA1HJ-270	CAPACITOR	27pF,50V
C223	QCTA1CH-220	CAPACITOR	22pF,16V
C224	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C227	QETF1HM-105	E CAPACITOR	1μF,50V
C228	QCYA1HK-272	CAPACITOR	0.0027μF,50V
C229	QCTA2CH-240	CAPACITOR	24pF,160V
C230	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C231	QCTA2CH-160	CAPACITOR	16pF,160V
C233	QCTA2CH-200	CAPACITOR	20pF,160V
C234	QFN31HJ-123	M CAPACITOR	0.012μF,50V
C235	QFN31HJ-123	M CAPACITOR	0.012μF,50V
C236	QETF1CM-106	E CAPACITOR	10μF,16V
C237	QFN31HJ-223	M CAPACITOR	0.022μF,50V
C238	QETF1CM-476	E CAPACITOR	47μF,16V
C239	QCFA1HZ-103	CAPACITOR	0.01μF,50V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C240	QETC0JM-477	E CAPACITOR	470μF,6.3V
C241	QETF0JM-476	E CAPACITOR	47μF,6.3V
C242	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C250	QCFA1HZ-473	CAPACITOR	0.047μF,50V
C253	QETF0JM-476	E CAPACITOR	47μF,6.3V
C254	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C255	QETF1EM-475	E CAPACITOR	4.7μF,25V
C256	QCVB1CN-103	CAPACITOR	0.01μF,16V
C257	QCSA1HJ-300	CAPACITOR	30pF,50V
C258	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C259	QCC11CJ-104	CAPACITOR	0.1μF,16V
L201	PU48530-101K	COIL	100μH
L202	PU60655	COIL,MESECAM DETECT	
L204	PU59152-150J	COIL	15μH
L205	PU59152-680J	COIL	68μH
L207	PU59152-270J	COIL	27μH
L208	PU59152-100J	COIL	10μH
L209	PU59152-390J	COIL	39μH
L210	PU48530-101K	COIL	100μH
L212	PU48530-101K	COIL	100μH
EQ201	PELN0742	EQUALIZER	
DL201	PU60496	DELAY LINE	
DL202	PEVB0515	COMB FILTER	

– SERVO SECTION –

IC401	JCP0039	CPU,SERVO PROCESS UNIT IC	
IC441	LVA521S	IC	
	or NJM2233BS	IC	
Q441	2SC3199(G)	TRANSISTOR	
	or 2SC1740S(R)	TRANSISTOR	
D401	1SS133	DIODE	
D402	1SS133	DIODE	
D403	1SS133	DIODE	
R401	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R402	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R403	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R404	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R405	QRSA08J-474YN	RESISTOR	470KΩ,1/10W
R406	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R407	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R408	QRD161J-102	RESISTOR	1KΩ,1/6W
R409	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R410	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R411	QRSA08J-225YN	RESISTOR	2.2MΩ,1/10W
R412	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R413	QRD161J-222	RESISTOR	2.2KΩ,1/6W
R414	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R415	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
R416	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R417	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R418	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R419	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R421	QRSA08J-394YN	RESISTOR	390KΩ,1/10W
R423	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R424	QRSA08J-273YN	RESISTOR	27KΩ,1/10W
R428	QRD161J-564	RESISTOR	560KΩ,1/6W
R429	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R430	QRSA08J-275YN	RESISTOR	2.7MΩ,1/10W
R431	QRSA08J-164YN	RESISTOR	160KΩ,1/10W
R432	QRD161J-822	RESISTOR	8.2KΩ,1/6W
R436	QRD161J-102	RESISTOR	1KΩ,1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R438	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R441	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R442	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R443	QRSA08J-563YN	RESISTOR	56KΩ,1/10W
	C401	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C402	QERF1AM-226	E CAPACITOR	22μF,10V
	C403	QERF1AM-226	E CAPACITOR	22μF,10V
	C404	QCSA1HJ-181	CAPACITOR	180pF,50V
	C405	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C407	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C408	PECA0780-563Z	M CAPACITOR	0.056μF
	C409	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C410	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C411	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C412	QERF1CM-106	E CAPACITOR	10μF,16V
	C413	QFV11HJ-224	F CAPACITOR	0.22μF,50V
	C414	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C415	QERF1EM-475	E CAPACITOR	4.7μF,25V
	C416	QERF1EM-475	E CAPACITOR	4.7μF,25V
	C417	QERF1CM-106	E CAPACITOR	10μF,16V
	C418	QERF1CM-106	E CAPACITOR	10μF,16V
	C419	QCC31CK-473	CAPACITOR	0.047μF,16V
	C420	QFV11HJ-394	F CAPACITOR	0.39μF,50V
	C421	QCSA1HJ-471	CAPACITOR	470pF,50V
	C441	QERF1AM-226	E CAPACITOR	22μF,10V
	C442	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C443	QCSA1HJ-220	CAPACITOR	22pF,50V
	C444	QCSA1HJ-470	CAPACITOR	47pF,50V
	C445	QCSA1HJ-390	CAPACITOR	39pF,50V
	C446	QCSA1HJ-101	CAPACITOR	100pF,50V
	C447	QERF1AM-226	E CAPACITOR	22μF,10V
	C448	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C449	QCSA1HJ-101	CAPACITOR	100pF,50V
⚠	X441	PEVB0475	CRYSTAL RESONATOR	
⚠	CP401	ICP-F15	CIRCUIT PROTECTOR	

– SYSTEM CONTROL SECTION –

IC601	HD6433926A22F	QFP IC (MCU)	
	or HD6473927FA22	QFP IC (MCU)	
IC602	S-80728AN	IC	
	or RE5VA28A	IC	
Q601	2SC4081(RS)	TRANSISTOR	
Q602	DTC124EU	CHIP D TRANSISTOR	
Q603	DTC143EU	TRANSISTOR	
Q604	DTC124EU	CHIP D TRANSISTOR	
Q605	DTC124EU	CHIP D TRANSISTOR	
Q606	DTC124EU	CHIP D TRANSISTOR	
Q608	DTC124EU	CHIP D TRANSISTOR	
D601	11ES2	DIODE	
D602	11ES2	DIODE	
D603	1SS133	DIODE	
D604	1SS133	DIODE	
D605	1SS133	DIODE	
D606	11ES2	DIODE	
R601	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R602	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R603	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R604	QRSA08J-563YN	RESISTOR	56KΩ,1/10W
R605	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
R606	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R607	QRSA08J-105YN	RESISTOR	1MΩ,1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R608	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R609	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R610	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R611	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R612	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R613	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R614	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R616	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R617	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R618	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R619	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R620	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R622	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R623	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R625	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R626	QRSA08J-681YN	RESISTOR	680Ω,1/10W
	R627	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R629	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R630	QRSA08J-681YN	RESISTOR	680Ω,1/10W
	R631	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R632	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R633	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R634	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R635	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R636	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R637	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R638	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R639	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R640	QRSA08J-221YN	RESISTOR	220Ω,1/10W
	R641	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R642	QRD161J-471	RESISTOR	470Ω,1/6W
	R643	QRSA08J-151YN	RESISTOR	150Ω,1/10W
	R644	QRD161J-102	RESISTOR	1KΩ,1/6W
	R645	QRD161J-102	RESISTOR	1KΩ,1/6W
	R646	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
	R647	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
	R648	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
	R649	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R650	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R651	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R652	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R653	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R654	QRSA08J-272YN	RESISTOR	2.7KΩ,1/10W
	R655	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R656	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R657	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R658	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R659	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R660	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R661	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R662	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R663	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R664	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R665	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R666	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R668	QRD161J-103	RESISTOR	10KΩ,1/6W
	R669	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R670	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R671	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R672	QRD161J-471	RESISTOR	470Ω,1/6W
	R673	QRD161J-333	RESISTOR	33KΩ,1/6W
	R674	QRD161J-183	RESISTOR	18KΩ,1/6W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R675	QRD161J-103	RESISTOR	10KΩ,1/6W
R676	QRD161J-103	RESISTOR	10KΩ,1/6W
R677	QRD161J-103	RESISTOR	10KΩ,1/6W
R678	QRD161J-333	RESISTOR	33KΩ,1/6W
R679	QRD161J-153	RESISTOR	15KΩ,1/6W
R680	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
R681	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R686	QRD161J-103	RESISTOR	10KΩ,1/6W
R687	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R689	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R690	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R697	QRD161J-104	RESISTOR	100KΩ,1/6W
R699	QRD161J-104	RESISTOR	100KΩ,1/6W
C603	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C604	QEKF1CM-106	E CAPACITOR	10μF,16V
C605	QEK41CM-106	E CAPACITOR	10μF,16V
C606	PECA0813-223Z	E CAPACITOR	0.022μF
C607	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C609	QEKF0JM-107	E CAPACITOR	100μF,6.3V
C610	QCC11CJ-104	CAPACITOR	0.1μF,16V
C613	QCSA1HJ-270	CAPACITOR	27pF,50V
C614	QAT3120-450Z	TRIM CAPACITOR,TIMER CLOCK	
C616	QCSA1HJ-470	CAPACITOR	47pF,50V
C624	QCYA1HK-471	CAPACITOR	470pF,50V
L601	PU48530-1R0K	COIL	1μH
⚠ CF601	PEVB0497	RESONATOR	
⚠ X601	PEVB0422	CRYSTAL RESONATOR	
⚠ CP601	ICP-F25	CIRCUIT PROTECTOR	

– TERMINAL SECTION –

Q702	2SB810H,J	TRANSISTOR
D701	1SS133	DIODE
D702	1SS133	DIODE
D703	1SS133	DIODE
D704	1SS133	DIODE
D705	1SS133	DIODE
D706	1SS133	DIODE
D707	1SS133	DIODE
R701	QRSA08J-750YN	RESISTOR 75Ω,1/10W
R703	QRD161J-393	RESISTOR 39KΩ,1/6W
R704	QRD161J-102	RESISTOR 1KΩ,1/6W
C703	QEK61CM-476	E CAPACITOR 47μF,16V
L701	PU59152-100J	COIL 10μH
L702	PU48530-101J	COIL 100μH
J702	PU60612	EARPHONE JACK,R.PAUSE
J703	PEMC0760-04	PIN JACK,VIDEO
J704	PEMC1027-02	PIN JACK,AUDIO(L)

– REGULATOR SECTION –

Q801	2SD2375(QP)	TRANSISTOR
Q802	2SD2375(QP)	TRANSISTOR
Q803	2SB1068(KU)	TRANSISTOR
Q804	2SC3616(MLK)	TRANSISTOR
D801	RD13ES-T1B2	ZENER DIODE
D802	HZ15CP	ZENER DIODE
D803	RD6.2ES-T1B1	ZENER DIODE
D811	11ES2	DIODE
D813	11ES2	DIODE
R801	QRD161J-222	RESISTOR 2.2KΩ,1/6W
R803	QRD161J-221	RESISTOR 220Ω,1/6W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R804	QRD161J-101	RESISTOR	100Ω,1/6W
R805	QRD161J-103	RESISTOR	10KΩ,1/6W
⚠ R806	QRG02DJ-102X	OMF RESISTOR	1KΩ,2W
R807	QRD161J-102	RESISTOR	1KΩ,1/6W
R808	QRD161J-331	RESISTOR	330Ω,1/6W
C803	QETC1AM-226	E CAPACITOR	22μF,10V
C804	QETA0JM-107	E CAPACITOR	100μF,6.3V
C805	QETF1CM-226	E CAPACITOR	22μF,16V
C806	QETC1CM-107	E CAPACITOR	100μF,16V
C807	QETA1CM-107	E CAPACITOR	100μF,16V
C808	QETF1CM-106	E CAPACITOR	10μF,16V
C809	QETC1AM-107	E CAPACITOR	100μF,10V
C815	QCBB1HJ-102	CAPACITOR	0.001μF,50V
C816	QCBB1HJ-102	CAPACITOR	0.001μF,50V
⚠ CP801	ICP-N20	CIRCUIT PROTECTOR	
⚠ CP802	ICP-N15	CIRCUIT PROTECTOR	

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VIDEO UNIT BOARD ASSEMBLY <05>

PWBA1	PB10761C-01	VIDEO UNIT BOARD ASSEMBLY	
IC1	TL8839P	IC	
IC2	JCP0035	IC	
Q1	2SA1576(QRS)	TRANSISTOR	
Q2	2SC4081(QRS)	TRANSISTOR	
Q3	2SA1576(QRS)	TRANSISTOR	
Q4	2SC4081(QRS)	TRANSISTOR	
Q5	2SC4081(QRS)	TRANSISTOR	
Q6	2SC4081(QRS)	TRANSISTOR	
Q7	2SC4081(QRS)	TRANSISTOR	
Q8	DTC114WU	TRANSISTOR	
Q9	2SC4081(QRS)	TRANSISTOR	
Q10	2SA1576(QRS)	TRANSISTOR	
Q11	DTC144WU	TRANSISTOR	
Q12	DTC144WU	TRANSISTOR	
Q13	DTA124EU	TRANSISTOR	
Q14	2SA1576(QRS)	TRANSISTOR	
Q101	2SC4081(QRS)	TRANSISTOR	
Q103	2SC4081(QRS)	TRANSISTOR	
Q104	2SC3936(BC)	TRANSISTOR	
Q105	DTC144WU	TRANSISTOR	
Q106	2SC3936(BC)	TRANSISTOR	
Q107	2SC3936(BC)	TRANSISTOR	
Q108	2SC4081(QRS)	TRANSISTOR	
Q109	DTA144WU	TRANSISTOR	
Q110	2SC3936(BC)	TRANSISTOR	
Q111	2SC3936(BC)	TRANSISTOR	
Q112	2SC4081(QRS)	TRANSISTOR	
Q114	DTC144WU	TRANSISTOR	
Q115	DTA124EU	TRANSISTOR	
D1	DAN202U	DIODE	
D2	DAN202U	DIODE	
D3	DAP202U	DIODE	
D4	1SS133	DIODE	
D5	1SS133	DIODE	
D7	1SS292	DIODE	
D101	DAN202U	DIODE	
R1	NRSA63J-681N	RESISTOR	680Ω,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R2	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R3	NRSA63J-361N	RESISTOR	360Ω,1/16W
R4	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R5	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R6	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R7	NRSA63J-681N	RESISTOR	680Ω,1/16W
R9	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R10	NRSA63J-621N	RESISTOR	620Ω,1/16W
R11	NRSA63J-331N	RESISTOR	330Ω,1/16W
R12	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R13	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R14	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R15	NRSA63J-221N	RESISTOR	220Ω,1/16W
R16	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R17	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R18	NVP1301-152NZ	V.RESISTOR,NC BALANCE	
R19	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R20	NRSA63J-681N	RESISTOR	680Ω,1/16W
R21	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R22	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R23	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R24	NRSA63J-821N	RESISTOR	820Ω,1/16W
R25	NVP1301-472N	V.RESISTOR,PB Y LEVEL	
R26	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R27	NRSA63J-561N	RESISTOR	560Ω,1/16W
R28	NVP1301-223N	V.RESISTOR,CARRIER	
R29	NVP1301-103N	V.RESISTOR,DEVIATION	
R30	NRSA63J-432N	RESISTOR	4.3KΩ,1/16W
R31	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R32	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R33	NRSA63J-561N	RESISTOR	560Ω,1/16W
R34	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R36	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R38	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R39	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R40	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R41	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R42	NVP1301-153N	V. RESISTOR,EE Y LEVEL	
R43	NRSA63J-823N	RESISTOR	82KΩ,1/16W
R44	NRSA63J-334N	RESISTOR	330KΩ,1/16W
R45	NVP1301-103N	V.RESISTOR,W/D CLIP	
R46	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R47	NRSA63J-434N	RESISTOR	430KΩ,1/16W
R48	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R49	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R50	NRSA63J-331N	RESISTOR	330Ω,1/16W
R51	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R52	NVP1301-222N	V.RESISTOR,REC COLOR LEVEL	
R53	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R54	NRSA63J-271N	RESISTOR	270Ω,1/16W
R55	NRSA63J-681N	RESISTOR	680Ω,1/16W
R56	NRSA63J-561N	RESISTOR	560Ω,1/16W
R57	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R58	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R61	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R62	NRSA63J-101N	RESISTOR	100Ω,1/16W
R101	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R103	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R104	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R105	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R106	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R107	NRSA63J-473N	RESISTOR	47KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R108	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R109	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R110	NRSA63J-561N	RESISTOR	560Ω,1/16W
R111	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R112	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R113	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R114	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R115	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R116	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R117	NRSA63J-242N	RESISTOR	2.4KΩ,1/16W
R118	NRSA63G-821N	RESISTOR	820Ω,1/16W
R119	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R120	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R121	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R122	NRSA63J-912N	RESISTOR	9.1KΩ,1/16W
R123	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R124	NRSA63J-331N	RESISTOR	330Ω,1/16W
R125	NRSA63G-821N	RESISTOR	820Ω,1/16W
R127	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R128	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R129	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R130	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R131	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R132	NRSA63J-681N	RESISTOR	680Ω,1/16W
R133	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R136	NRSA63J-333N	RESISTOR	33KΩ,1/16W
C1	NCS31HJ-221A	CAPACITOR	220pF,50V
C2	NCS31HG-561A	CAPACITOR	560pF,50V
C3	NCS31HG-361A	CAPACITOR	360pF,50V
C4	NCS31HJ-220A	CAPACITOR	22pF,50V
C5	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C6	NCS31HJ-150A	CAPACITOR	15pF,50V
C7	NCS31HJ-220A	CAPACITOR	22pF,50V
C8	NCS31HJ-680A	CAPACITOR	68pF,50V
C9	NCS31HG-121A	CAPACITOR	120pF,50V
C10	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C11	QCFA1HZ-473	CAPACITOR	0.047μF,50V
C12	QETC1HM-474	E CAPACITOR	0.47μF,50V
C13	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C14	QCFA1HZ-104	CAPACITOR	0.1μF,50V
C15	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C16	NCS31HJ-390A	CAPACITOR	39pF,50V
C17	NCS31HJ-180A	CAPACITOR	18pF,50V
C18	NCS31HJ-220A	CAPACITOR	22pF,50V
C19	QETC0JM-476	E CAPACITOR	47μF,6.3V
C20	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C21	NCS31HJ-330A	CAPACITOR	33pF,50V
C22	QETC1HM-474	E CAPACITOR	0.47μF,50V
C23	QETC1HM-474	E CAPACITOR	0.47μF,50V
C24	QETC1EM-475	E CAPACITOR	4.7μF,25V
C25	QETC1CM-106	E CAPACITOR	10μF,16V
C26	QETC1AM-226	E CAPACITOR	22μF,10V
C27	QETC1CM-106	E CAPACITOR	10μF,16V
C28	QETC0JM-107	E CAPACITOR	100μF,6.3V
C29	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C30	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C31	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C32	QETC1HM-225	E CAPACITOR	2.2μF,50V
C33	QETC1HM-474	E CAPACITOR	0.47μF,50V
C34	NCS31HJ-620A	CAPACITOR	62pF,50V
C35	NCS31HG-201A	CAPACITOR	200pF,50V
C36	QETC1EM-475	E CAPACITOR	4.7μF,25V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
	C37	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C40	QETC1HM-105	E CAPACITOR	1μF,50V
	C41	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C42	NCS31HJ-101A	CAPACITOR	100pF,50V
	C43	NCS31HJ-390A	CAPACITOR	39pF,50V
	C44	QENC1EM-475	NP E CAPACITOR	4.7μF,25V
	C45	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C46	NCF31CZ-473A	CAPACITOR	0.047μF,16V
	C47	QETC1HM-104	E CAPACITOR	0.1μF,50V
	C48	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C49	NCB31CK-333A	CAPACITOR	0.033μF,16V
	C50	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C51	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C52	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C53	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C54	NCB31CK-473A	CAPACITOR	0.047μF,16V
	C55	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C56	NCS31HJ-5R0A	CAPACITOR	5pF,50V
	C57	QETC1HM-105	E CAPACITOR	1μF,50V
	C58	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C59	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C60	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C61	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C62	NCB31HK-182A	CAPACITOR	0.0018μF,50V
	C69	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C101	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C104	NCS31HJ-390A	CAPACITOR	39pF,50V
	C105	NCS31HG-130A	CAPACITOR	13pF,50V
	C106	NCS31HJ-560A	CAPACITOR	56pF,50V
	C107	NCS31HJ-5R0A	CAPACITOR	5pF,50V
	C108	NCS31HJ-120A	CAPACITOR	12pF,50V
	C109	NCS31HJ-680A	CAPACITOR	68pF,50V
	C110	NCS31HJ-680A	CAPACITOR	68pF,50V
	C113	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C114	NCT08CH-220A	CAPACITOR	22pF,50V
	C115	NCT08CH-121A	CAPACITOR	120pF,50V
	C116	NCT08CH-330A	CAPACITOR	33pF,50V
	C117	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C118	NCT08CH-360A	CAPACITOR	36pF,50V
	C119	NCB31CK-473A	CAPACITOR	0.047μF,16V
	C120	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C121	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C122	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C125	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	L1	PU59988-121JY	COIL	120μH
	L2	PU59988-330J	COIL	33μH
	L3	PU59988-330J	COIL	33μH
	L4	PU59988-820J	COIL	82μH
	L5	PU59988-221J	COIL	220μH
	L6	PU59153-101K	COIL	100μH
	L7	PU59988-680J	COIL	68μH
⚠	L8	PU48530-101K	COIL	100μH
	L9	PU59988-121JY	COIL	120μH
	L11	PU48530-561J	COIL	560μH
	L101	PU59988-820J	COIL	82μH
	LPF1	PELN0913	LOW PASS FILTER	
	LPF2	PELN0892	LOW PASS FILTER	
⚠	DL1	PU60874	1H DELAY LINE	
⚠	X101	PEVB0386	CRYSTAL RESONATOR	
⚠		or PEVB0386-C	XTAL (M)	
⚠	X102	PEVB0438-02	CRYSTAL RESONATOR	
⚠	X103	PEVB0444	CRYSTAL RESONATOR	
	CN1,2,3	PEMC0712-112	PIN HEADER	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

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TUNER IF BOARD ASSEMBLY <07>

PWBA1	PB10746C1	IF BOARD ASSEMBLY	
SLD1	PQ21581	SHIELD FRAME	
IC1	LA7577V	IC	
IC3	BA10358	IC	
Q1	2SC2001(LK)	TRANSISTOR	
Q3	2SC3932(ST)	TRANSISTOR	
Q4	2SC4081(RS)	TRANSISTOR	
Q5	DTC144EU	TRANSISTOR	
Q6	DTC114YU	TRANSISTOR	
Q7	2SC3932(ST)	TRANSISTOR	
Q8	2SC4081(RS)	TRANSISTOR	
Q9	DTC144EU	TRANSISTOR	
Q10	DTC114YU	TRANSISTOR	
Q11	DTC114YU	TRANSISTOR	
Q12	DTC114YU	TRANSISTOR	
Q13	2SC4081(RS)	TRANSISTOR	
Q14	2SA1576(RS)	TRANSISTOR	
Q15	DTC114YU	TRANSISTOR	
Q16	FMS1	TRANSISTOR	
Q17	FMG2	TRANSISTOR	
Q18	2SC4081(RS)	TRANSISTOR	
Q19	2SA1576(RS)	TRANSISTOR	
D1	MTZ11B	ZENER DIODE	
D2	SVC321SPA-B-1	V.DIODE	
D3	DAP202U	DIODE	
D4	IMN10	DIODE	
D5	1SS133	DIODE	
R1	NRSA63J-101N	RESISTOR	100Ω,1/16W
R2	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R4	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R5	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R6	NRSA63J-470N	RESISTOR	47Ω,1/16W
R7	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R8	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R10	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R11	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R12	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R13	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R14	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R15	NRSA63J-470N	RESISTOR	47Ω,1/16W
R16	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R17	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R19	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R20	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R21	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R22	NRSA63J-512N	RESISTOR	5.1KΩ,1/16W
R23	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R24	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R25	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R26	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R27	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R28	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R29	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R30	QVPA606-103Z	V RESISTOR,RF AGC	
R31	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R32	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R33	NRSA63J-824N	RESISTOR	820KΩ,1/16W
R34	NRSA63J-104N	RESISTOR	100KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R35	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R37	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R38	NRSA63J-151N	RESISTOR	150Ω,1/16W
R39	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R40	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R41	NRSA63J-271N	RESISTOR	270Ω,1/16W
R42	NRSA63J-471N	RESISTOR	470Ω,1/16W
R43	NRSA63J-181N	RESISTOR	180Ω,1/16W
R44	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R45	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R46	NRSA63J-560N	RESISTOR	56Ω,1/16W
R47	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R48	NRSA63J-560N	RESISTOR	56Ω,1/16W
R50	NRSA63J-221N	RESISTOR	220Ω,1/16W
R51	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R52	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R53	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R54	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R55	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R56	NRSA63J-221N	RESISTOR	220Ω,1/16W
R57	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R58	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R59	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R61	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R62	NRSA63J-683N	RESISTOR	68KΩ,1/16W
R63	NRSA63J-331N	RESISTOR	330Ω,1/16W
R64	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R65	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R66	NRSA63J-471N	RESISTOR	470Ω,1/16W
R67	NRSA63J-561N	RESISTOR	560Ω,1/16W
R68	NRSA63J-561N	RESISTOR	560Ω,1/16W
R69	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R70	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R71	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R73	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R75	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R77	QRD161J-222	RESISTOR	2.2KΩ,1/6W
R78	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R79	QRD161J-223	RESISTOR	22KΩ,1/6W
R80	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R81	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R82	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R83	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R84	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R85	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R86	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R87	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R88	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R89	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R301	QRD161J-223	RESISTOR	22KΩ,1/6W
C2	QETF1CM-476	E CAPACITOR	47μF,16V
C5	NCB31HK-102A	CAPACITOR	0.001μF,50V
C7	NCB31HK-102A	CAPACITOR	0.001μF,50V
C8	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C9	NCB31HK-102A	CAPACITOR	0.001μF,50V
C10	NCB31HK-102A	CAPACITOR	0.001μF,50V
C11	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C13	NCB31HK-102A	CAPACITOR	0.001μF,50V
C14	NCB31HK-102A	CAPACITOR	0.001μF,50V
C15	NCB31HK-102A	CAPACITOR	0.001μF,50V
C16	QCBB1HK-102	CAPACITOR	0.001μF,50V
C18	NCB31HK-102A	CAPACITOR	0.001μF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C19	NCB31HK-102A	CAPACITOR	0.001μF,50V
C20	NCB31HK-102A	CAPACITOR	0.001μF,50V
C21	NCB31HK-102A	CAPACITOR	0.001μF,50V
C22	NCB31HK-102A	CAPACITOR	0.001μF,50V
C24	QFLC1HJ-393Z	M CAPACITOR	0.039μF,50V
C25	QEKF1HM-105	E CAPACITOR	1μF,50V
C26	QFLC1HJ-153Z	M CAPACITOR	0.015μF,50V
C27	NCB31HK-103A	CAPACITOR	0.01μF,50V
C28	NCT06CH-680A	CAPACITOR	68pF,50V
C29	NCT06CH-680A	CAPACITOR	68pF,50V
C30	NCT06CH-680A	CAPACITOR	68pF,50V
C31	NCS31HJ-331A	CAPACITOR	330pF,50V
C32	QEKF1HM-224	E CAPACITOR	0.22μF,50V
C33	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C34	NCB31HK-102A	CAPACITOR	0.001μF,50V
C35	NCB31HK-103A	CAPACITOR	0.01μF,50V
C36	QETF1CM-476	E CAPACITOR	47μF,16V
C37	NCB31HK-102A	CAPACITOR	0.001μF,50V
C38	NCT06CH-150A	CAPACITOR	15pF,50V
C39	QFLC1HJ-683Z	M CAPACITOR	0.068μF,50V
C40	NCB31HK-102A	CAPACITOR	0.001μF,50V
C41	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C42	NCT06CH-180A	CAPACITOR	18pF,50V
C43	NCT06CH-101A	CAPACITOR	100pF,50V
C44	NCB31HK-103A	CAPACITOR	0.01μF,50V
C45	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C51	NCB31HK-103A	CAPACITOR	0.01μF,50V
C52	NCT06CH-330A	CAPACITOR	33pF,50V
C53	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C54	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C56	NCB31HK-103A	CAPACITOR	0.01μF,50V
C57	NCB31HK-103A	CAPACITOR	0.01μF,50V
C58	NCT06CH-820A	CAPACITOR	82pF,50V
C59	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C60	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C61	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C62	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C63	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C64	QEKF1CM-106	E CAPACITOR	10μF,16V
C65	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C66	QEKF1CM-106	E CAPACITOR	10μF,16V
C84	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C85	QCT30CH-100	CAPACITOR	10pF
L1	PU60025-R82	COIL	0.82μH
L2	PU60025-2R4	COIL	2.4μH
L3	PU60025-2R4	COIL	2.4μH
L4	PU60025-R91	COIL	0.91μH
L5	PU59152-1R0J	COIL	1μH
L6	PU59152-1R0J	COIL	1μH
L7	PU59152-6R8J	COIL	6.8μH
L8	PU59152-220J	COIL	22μH
L9	PU59152-100J	COIL	10μH
L10	PU59152-470J	COIL	47μH
L11	PU59152-100J	COIL	10μH
L12	PU59152-8R2J	COIL	8.2μH
L13	PU59152-220J	COIL	22μH
CF2	PU32990-2	CERAMIC FILTER	
CF3	PU32990	CERAMIC FILTER	
CF4	PU32990	CERAMIC FILTER	
CF5	PEVB0339	C TRAP	
CF6	PU49295-2	N FILTER	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
CF7	PU60774-3	CERAMIC FILTER
CF8	PU60774-4	CERAMIC FILTER
CF9	PU60774	CERAMIC FILTER
SAW1	PU60954-2	SAW FILTER
SAW2	PEVB0364	SAW FILTER
SAW3	PEVB0545	SAW FILTER
T1	PELN0669	IF.TRANSFORMER,FM DET
T2	PELN0443-02	IF.TRANSFORMER,AFC
T3	PELN0444-02	IF.TRANSFORMER,VCO
JP1	PEMC0742-008	B TO B CONNECTOR(1-8)TUNER CTL
JP2	PEMC0742-008	B TO B CONNECTOR
SCW1	SDST2605Z	SCREW,X2

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TUNER CTL BOARD ASSEMBLY <08>

PWBA2	PB10746C2	TUNER CONTROL BOARD ASSEMBLY	
⚠ TNR1	PERF0151	TUNER	
IC101	AN1358	IC	
or	AN6562-SG	IC	
or	M5223P	IC	
or	TA75358P	IC	
IC102	M50253P	IC	
Q101	2SC4081(RS)	TRANSISTOR	
Q102	DTA123YU	TRANSISTOR	
Q103	DTA123YU	TRANSISTOR	
Q104	DTA123YU	TRANSISTOR	
Q105	2SB810H,J	TRANSISTOR	
Q106	2SD1450S,T	TRANSISTOR	
Q108	2SK381(C)	FE TRANSISTOR	
Q109	2SC4081(RS)	TRANSISTOR	
Q110	DTC144EU	TRANSISTOR	
Q111	DTC123YU	TRANSISTOR	
Q112	2SC4081(S)	TRANSISTOR	
Q113	FMS2	TRANSISTOR	
Q114	2SC4081(RS)	TRANSISTOR	
D101	HZT31	ZENER DIODE	
D102	DA204U	DIODE	
R101	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R102	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R103	NRSA63J-331N	RESISTOR	330Ω,1/16W
R104	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R105	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R106	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R107	QRSA08J-243YN	RESISTOR	24KΩ,1/10W
R108	QRSA08J-243YN	RESISTOR	24KΩ,1/10W
R109	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R111	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R113	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R115	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R117	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R118	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R119	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R120	NRSA63J-683N	RESISTOR	68KΩ,1/16W
R121	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R122	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R131	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R133	NRSA63J-105N	RESISTOR	1MΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R134	NRSA63J-683N	RESISTOR	68KΩ,1/16W
R135	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R136	NRSA63J-821N	RESISTOR	820Ω,1/16W
R137	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R141	NRSA63J-471N	RESISTOR	470Ω,1/16W
R142	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R143	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R144	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R145	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R146	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R147	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R148	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R149	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R150	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R154	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R160	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R161	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R162	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R163	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R164	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R171	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C101	NCB31HK-103A	CAPACITOR	0.01μF,50V
C102	QFLC1HJ-333Z	M CAPACITOR	0.033μF,50V
C103	QFLC1HJ-153Z	M CAPACITOR	0.015μF,50V
C104	QETF1HM-106	E CAPACITOR	10μF,50V
C105	QCTA1CH-470	CAPACITOR	47pF,16V
C106	QETF1HM-106	E CAPACITOR	10μF,50V
C107	QETF1CM-476	E CAPACITOR	47μF,16V
C108	QCYA1HK-103	CAPACITOR	0.01μF,50V
C109	QETF1CM-476	E CAPACITOR	47μF,16V
C110	QEKF1HM-225	E CAPACITOR	2.2μF,50V
C112	QEKF1HM-224	E CAPACITOR	0.22μF,50V
C114	QCYA1HK-103	CAPACITOR	0.01μF,50V
C121	QEKF1HM-104	E CAPACITOR	0.1μF,50V
C124	QCYA1HK-223	CAPACITOR	0.022μF,50V
C125	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C131	QCYA1HK-103	CAPACITOR	0.01μF,50V
C141	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
T101	PELN0806	COIL	
CN1	PEMC0723-010	B TO B CONNECTOR	
CN2	PEMC0723-010	B TO B CONNECTOR,(1-10) MAIN	

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AUDIO/CONTROL HEAD BOARD ASSY <12>

PWBA	PB40069	AUDIO CONTROL HEAD BOARD
CN1	PU60910-107	WIRE TRAP

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DISPLAY BOARD ASSEMBLY <28>

PWBA1	PB10762B1	DISPLAY BOARD ASSEMBLY
IC1	UPD16311GC(K)	IC
or	UPD16311GC(E)	IC

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC2	GP1U541X	IR DETECT UNIT	
		or GP1U801X	IR DETECT UNIT	
	D1	RD9.1ES-T1B2	ZENER DIODE	
	D2	1SS132	DIODE	
	D3	1SS132	DIODE	
	D4	1SS132	DIODE	
	D5	1SS132	DIODE	
	D6	1SS132	DIODE	
	D7	11ES2	DIODE	
	D8	11ES2	DIODE	
	D9	SLH-34VC3F	LE DIODE,INDEX	
	D10	1SS132	DIODE	
	D11	1SS132	DIODE	
	R1	QRD161J-103	RESISTOR	10KΩ,1/6W
	R2	QRD161J-333	RESISTOR	33KΩ,1/6W
	R3	QRD161J-333	RESISTOR	33KΩ,1/6W
	R4	QRD161J-333	RESISTOR	33KΩ,1/6W
	R5	QRD161J-333	RESISTOR	33KΩ,1/6W
	R6	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R7	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R8	QRD161J-102	RESISTOR	1KΩ,1/6W
	R11	QRD161J-333	RESISTOR	33KΩ,1/6W
	R12	QRD161J-103	RESISTOR	10KΩ,1/6W
	R14	QRD161J-331	RESISTOR	330Ω,1/6W
	R17	QRD161J-331	RESISTOR	330Ω,1/6W
	RA1	QRB047J-333	RESISTOR ARRAY	33KΩ,4W
	C2	QEK61HM-106	E CAPACITOR	10μF,50V
	C5	QCSB1HJ-330	CAPACITOR	33pF,50V
	C8	QCC31CK-104	CAPACITOR	0.1μF,16V
	C9	QCSB1HJ-330	CAPACITOR	33pF,50V
	C10	QEK60JM-476	E CAPACITOR	47μF,6.3V
	C12	QETC1AM-227	E CAPACITOR	220μF,10V
	C15	QCBB1HJ-102	CAPACITOR	0.001μF,50V
	C16	QCBB1HJ-101	CAPACITOR	100pF,50V
	C20	QCBB1HJ-102	CAPACITOR	0.001μF,50V
	L1	PU48530-101J	COIL	100μH
	S1	PU60975-2Z	TACT SWITCH,CH+	
	S2	PU60975-2Z	TACT SWITCH,REC/ITR	
	S3	PU60975-2Z	TACT SWITCH,PAUSE	
	S4	PU60975-2Z	TACT SWITCH,CH-	
	S5	PU60975-2Z	TACT SWITCH,PLAY	
	S6	PU60975-2Z	TACT SWITCH,STOP/EJECT	
	S9	PU60975-2Z	TACT SWITCH,SP/LP/EP	
	S17	PU60975-2Z	TACT SWITCH,SYSTEM	
	S29	PU60975-2Z	TACT SWITCH,AUTO/MANU	
	S32	PU60975-2Z	TACT SWITCH,TV/VIDEO	
⚠	FDP1	PEDP0098-02	FLUORESCENT DISPLAY PANEL	
	CL1	PU59311	WIRE CLAMP,X3	
	HD1	PQM30038-2-2	LED HOLDER,FOR D9	
	HD2	PQ31334-1-2	D.HOLDER (R)	
	HD3	PQ31333-1-2	D.HOLDER (L)	
	J1	PW30219-0673001	WIRE	
	J2	PW30219-0662420	WIRE	
	CN1	PEMC0915-109	FFC CONNECTOR,(1-9) MAIN	
	CN2	PEMC0724-008	B TO B CONNECTOR,(1-8) SW/JAC	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	

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MEMORY BOARD ASSEMBLY <35>

	PWBA3	PB10746C3	MEMORY BOARD ASSEMBLY	
	IC201	CAT35C102P	IC	
		or S-2924AI10G	IC	
		or S-2924AI10M	IC	
	C201	QCYA1HK-103	CAPACITOR	0.01μF,50V
	CN4	PEMC0713-105	HOUSING,(1-5) MAIN	

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SWITCH BOARD ASSEMBLY <36>

	PWBA1	PB10762A2-01	SWITCH BOARD ASSEMBLY	
⚠	D17	SLH-34VC3F	LE DIODE,OPERATE	
	S10	PU60975-2Z	TACT SWITCH,CANCEL	
	S11	PU60975-2Z	TACT SWITCH,TIMER	
	S12	PU60975-2Z	TACT SWITCH,OPERATE	
	S13	PU60975-2Z	TACT SWITCH,START TIMER+	
	S14	PU60975-2Z	TACT SWITCH,START TIMER-	
	S15	PU60975-2Z	TACT SWITCH,STOP TIMER+	
	S16	PU60975-2Z	TACT SWITCH,STOP TIMER-	
	HD1	PQ43214	LED HOLDER,FOR D17	
	CN3	PEMC0723-008	B TO B CONNECTOR,(1-8)SW/DISP	

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PRE/REC BOARD ASSEMBLY <43>

	PWBA1	PB10771F	PRE/REC BOARD ASSEMBLY	
	IC501	AN3389SB-XE	IC	
	Q503	2SC4081(QRS)	TRANSISTOR	
	Q504	2SC4081(QRS)	TRANSISTOR	
	Q505	2SA1576(QRS)	TRANSISTOR	
	Q506	2SC4081(QRS)	TRANSISTOR	
	Q507	2SC4081(QRS)	TRANSISTOR	
	Q508	DTC144WU	TRANSISTOR	
	Q512	DTC114WU	TRANSISTOR	
	Q513	DTA144WU	TRANSISTOR	
	Q514	DTA124EU	TRANSISTOR	
	Q517	DTA144WU	TRANSISTOR	
	Q518	DTA144WU	TRANSISTOR	
	D502	1SS133	DIODE	
	D505	1SS133	DIODE	
	D508	DAN202U	DIODE	
	D509	DAN202U	DIODE	
	R509	QRSA08J-432YN	RESISTOR	4.3KΩ,1/10\
	R510	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10\
	R514	QRSA08J-681YN	RESISTOR	680Ω,1/10\
	R515	QRSA08J-102YN	RESISTOR	1KΩ,1/10\
	R516	QRSA08J-751YN	RESISTOR	750Ω,1/10\
	R517	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10\
	R518	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10\
	R519	QRSA08J-391YN	RESISTOR	390Ω,1/10\

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R520	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R521	QRSA08J-911YN	RESISTOR	910Ω,1/10W
R522	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R523	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R524	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R525	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
R526	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R527	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R528	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R531	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R532	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R536	NRVA62D-433N	RESISTOR	43KΩ,1/16W
R537	QRSA08J-124YN	RESISTOR	120KΩ,1/10W
R539	QRD161J-334	RESISTOR	330KΩ,1/6W
R541	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R542	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R543	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R544	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R545	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R548	QRSA08J-154YN	RESISTOR	150KΩ,1/10W
R550	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R551	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R552	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R554	QRSA08J-391YN	RESISTOR	390Ω,1/10W
C504	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C505	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C506	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C507	QCSA1HJ-331	CAPACITOR	330pF,50V
C508	QCSA1HJ-150	CAPACITOR	15pF,50V
C509	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C510	QCSA1HJ-270	CAPACITOR	27pF,50V
C511	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C512	QCSA1HJ-390	CAPACITOR	39pF,50V
C513	QCSA1HJ-471	CAPACITOR	470pF,50V
C514	QCSA1HJ-120	CAPACITOR	12pF,50V
C515	QCTA1CH-8R0	CAPACITOR	8pF,16V
C516	QCC11CJ-104	CAPACITOR	0.1μF,16V
C517	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C518	QCSA1HJ-391	CAPACITOR	390pF,50V
C521	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C522	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C523	QCYA1HK-333	CAPACITOR	0.033μF,50V
C524	QCSA1HJ-680	CAPACITOR	68pF,50V
C525	QCSA1HJ-560	CAPACITOR	56pF,50V
C526	QCYA1HK-333	CAPACITOR	0.033μF,50V
C527	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C528	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C529	QCYA1HK-333	CAPACITOR	0.033μF,50V
C530	QCSA1HJ-680	CAPACITOR	68pF,50V
C531	QCSA1HJ-560	CAPACITOR	56pF,50V
C532	QCYA1HK-333	CAPACITOR	0.033μF,50V
C533	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C534	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C535	QCC11CJ-104	CAPACITOR	0.1μF,16V
C536	QER61CM-476	E CAPACITOR	47μF,16V
C537	QER60JM-476	E CAPACITOR	47μF,6.3V
C538	QCVB1CN-103	CAPACITOR	0.01μF,16V
C539	QFV11HJ-103	F CAPACITOR	0.01μF,50V
C540	QCSA1HJ-470	CAPACITOR	47pF,50V
C541	QCSA1HJ-390	CAPACITOR	39pF,50V
C543	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C545	QCVB1CN-103	CAPACITOR	0.01μF,16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C549	QCFA1CZ-224	CAPACITOR	0.22μF,16V
C550	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C551	QCSA1HJ-560	CAPACITOR	56pF,50V
C554	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C556	QCSA1HJ-1R0	CAPACITOR	1pF,50V
C558	QCTA1CH-100	CAPACITOR	10pF,16V
C559	QCSA1HJ-120	CAPACITOR	12pF,50V
L501	PU54223-470J	COIL	47μH
L503	PU54223-680K	COIL	68μH
L504	PU59152-560J	COIL	56μH
L505	PU59152-220J	COIL	22μH
L506	PU59152-470J	COIL	47μH
L507	PU59152-470J	COIL	47μH
L508	PU59152-121J	COIL	120μH
L509	PU59152-330J	COIL	33μH
L510	PU59152-180J	COIL	18μH
BKT1	PQ21512	S.FRAME(PRE.)	
CN501	PEMC0978-118	B TO B CONN,(1-18) MAIN	
CN502	PEMC1004-006	CONNECTOR,(1-6) UPPER DRUM	

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DECK TERMINAL BOARD ASSEMBLY <51>

PWBA1	PB10718D1	DECK TERMINAL BOARD ASSEMBLY	
Q3	PT491F	END SENSOR	
D1	SIR-381SB3FM	LE DIODE	
D2	RD6.2ES-T1B2	ZENER DIODE	
R1	QRD161J-102	RESISTOR	1KΩ,1/6W
R3	QRD161J-331	RESISTOR	330Ω,1/6W
R4	QRD161J-820	RESISTOR	82Ω,1/6W
C1	QCVB1CM-103	CAPACITOR	0.01μF,16V
PS1	PS5705HR	PH INTERRUPTER	
CN1	PEMC0915-016	FFC CONNECTOR	
CN2	PU60642	7PIN CONNECTOR,(1-7) CAP MDA	
CN3	PU60640	4PIN CONNECTOR,(1-4) CASS.HOU	
CN4	PU60910-4	CONNECTOR	

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LOARDING MDA BOARD ASSEMBLY <55>

	PWBA2	PB10718A2-01	LOADING MDA BOARD ASSEMBLY	
⚠	IC1	BA6418N	IC	
	C1	QETA1CM-227	E CAPACITOR	220μF,16V
	CN1	PU60910-104	WIRE TRAP	

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CASSETTE HOUSING BOARD <56>

PWBA1	PB10718A3-01	CASSETTE HOUSING BOARD ASSY	
Q2	PN268VI	PHOTO TRANSISTOR	
C1	QCVB1CN-103	CAPACITOR	0.01μF,16V
S1	PESW0589	PUSH SWITCH	
CN2	PU60639	4PIN SOCKET,DECK TERMINAL	

SECTION 6
TECHNICAL INFORMATIONS

6.1 MECHACON CIRCUIT

6.1.1 Mechacon CPU pin function (IC601) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	S.CURVE	IN	TUNING CHECK
2	P.DOWN	IN	POWER DOWN DETECT(POWER DOWN:H - L)
3	FM DET	IN	TUNING DETECT SIGNAL
4	AVGFM	IN	AUTO TRACKING DATA(AVERAGE VOLTAGE OF PB FM LEVEL) INPUT
5	AVSS	-	GND
6	TEST	-	GND
7	X2	-	MAIN SYSTEM CLOCK(10MHz)
8	X1	-	MAIN SYSTEM CLOCK(10MHz)
9	VSS	-	GND
10	OSC1	IN	SUB SYSTEM CLOCK
11	OSC2	OUT	SUB SYSTEM CLOCK
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	NC
14	YNR CTL	OUT	PICTURE CONTROL(YNR CTL:L)
15	PB SPCL	OUT	SPECIAL PB MODE:L
16	P MUTE	OUT	PICTURE MUTE CONTROL(MUTE ON:L)
17	SYNC DET	IN	SYNC DETECT(NO SYNC:H)
18	UHF/AI DATA	-	NC
19	REC	OUT	REC:H
20	EE	OUT	EE MODE:L
21	RECST	OUT	REC START:L
22	CTL P	IN	CONTROL PULSE INPUT(MODE DETECT/TRACKING CONTROL)
23	TUFG	IN	TAKE-UP REEL ROTATION DETECT
24	COLCTL	IN	COLOR CONTROL
25	KARAOKE	-	NC
26	ARECST/VHF	-	NC
27	S/E/L CTL	OUT	TAPE SPEED CONTROL(SP:H/LP:M/EP:L)
28	A.MUTE	OUT	AUDIO MUTE CONTROL(MUTE ON:H)
29	N.D/VIDEO	OUT	VIDEO MODE : L
30	3.58DET	-	NC
31	H SEL	OUT	HEAD SELECT CONTROL (SP:L/LP:M/EP:H)
32	A/M/S	OUT	PRE/REC CIRCUIT CONTROL (AUTO:M/MANUAL:H/S&S:L)
33	MCE	OUT	MEMORY IC CHIP ENABLE
34	TU CTL/AI CLK	-	NC
35	EXT DATA	OUT	ABIT EXP DATA OUTPUT FOR CHANNEL PLS CONTROL
36	S/M CLK	OUT	DATA TRANSFER CLOCK
37	SERVO	OUT	CAPSTAN MOTOR CONTROL(SERVO MODE:L/SYSCON MODE;H)
38	PAUSE	OUT	CAPSTAN MOTOR CONTROL(PAUSE:L)
39	START.S	IN	LEADER TAPE DETECT(DETECT ON:L)
40	CASS	IN	CASSETTE SENSOR(SENSOR ON:L)

Table 6-1-1-A MECHACON CPU pin function (1/2)

6.1.2 Mechacon CPU pin function (IC601) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	LSA	IN	MECHANISM MODE DETECT(SW A)
42	LSB	IN	MECHANISM MODE DETECT(SW B)
43	REC SF	IN	REC SAFETY SWITCH DETECT(SW ON:L)
44	END S	IN	TRAILER TAPE DETECT(DETECT ON:L)
45	VPCTL	OUT	V.PULSE ADDITION TIMING CONTROL
46	CAP REV	OUT	CAPSTAN MOTOR CONTROL(FWD:H/REV:L)
47	MES DET	IN	MESECAM DETECT(PAL:H)
48	CCIR	OUT	CCIR:L
49	NTSC	OUT	NTSC MODE:L
50	RC IN	IN	REMOTE CONTROL DATA INPUT
51	V.MUTE	OUT	VIDEO MUTE CONTROL(MUTE ON:H)
52	B/W.LPSPCL	OUT	LP SPECIAL PB MODE:H
53	V.SYNC	IN	V.SYNC INPUT
54	EXV DATA	OUT	VIDEO MODE CTL DATA
55	LCM1	OUT	LOADING MOTOR CONTROL(1)
56	LCM2	OUT	LOADING MOTOR CONTROL(2)
57	S-OUT	OUT	ON SCREEN CONTROL DATA
58	S-IN	IN	ON SCREEN /FDP CONTROL DATA
59	S-CLK	OUT	DATA TRANSFER CLOCK
60	SERVO DATA	OUT	SERVO IC CONTROL DATA
61	FDATA	IN/OUT	MOMORY IC DATA
62	SERVO CLK	OUT	DATA TRANSFER CLOCK
63	VCC	-	SYSTEM POWER
64	STB	IN	CLOCK OUTPUT PERMISSION
65	R.PAUSE	IN	PAUSE CONTROL(PAUSE ON:L)
66	PCTL	OUT	POWER CONTROL(POWER ON:H)
67	CPLS	IN	CONTROL PULSE
68	PWM	OUT	CHANNEL DATA
69	CAP FG	IN	TAPE SPEED DETECT/BACK SPACE COUNT
70	DUTY I/O	IN/OUT	IN/OUT INDEX DATA CONTROL
71	D.FF	IN	DRUM ROTATION DETECT/REC TIMING CONTROL
72	AVCC	-	SYSTEM POWER(for ANALOG)
73	JSA	IN	JOG PULSE INPUT(A)
74	JSB	IN	JOG PULSE INPUT(B)
75	DRUM V	OUT	DRUM MOTOR CONTROL
76	CAP V	OUT	CAPSTAN MOTOR CONTROL
77	STL(L)	IN	SHUTTLE SWITCH
78	SECAM DET/A.LVLL	-	NC
79	PROTECT	IN	POWER PROTECT DETECT(POWER OFF:L)
80	A.LVLR	-	NC

Table 6-1-1-B MECHACON CPU pin function (2/2)

6.2 TIMER CIRCUIT

6.2.1 Timer CPU pin function (IC1)

PIN NO.	LABEL	IN/OUT	NOTE
1	SW1	-	GND
2	SW2	-	
3	SW3	-	
4	SW4	-	
5	DOUT	OUT	SERIAL DATA OUTPUT
6	DIN	IN	SERIAL DATA INPUT
7	IC	-	NC
8	CLK	IN	DATA TRANSFER CLOCK
9	STB	OUT	CLOCK OUTPUT PERMISSION
10	KEY1	IN	KEY SCAN DATA INPUT
11	KEY2	IN	
12	KEY3	IN	
13	KEY4	IN	
14	VDD	-	UNSW5V
15	S1	OUT	SEGMENT DISPLAY DATA / KEY SCAN PULSE OUTPUT
16	S2	OUT	
17	S3	OUT	
18	S4	OUT	
19	S5	OUT	
20	S6	OUT	SEGMENT DISPLAY DATA OUTPUT
21	S7	OUT	
22	S8	OUT	
23	S9	OUT	
24	S10	OUT	
25	S11	OUT	
26	S12	OUT	SEGMENT DISPLAY DATA/KEY SCAN PULSE OUTPUT
27	S13	OUT	SEGMENT DISPLAY DATA OUTPUT
28	S14	OUT	
29	S15	OUT	
30	S16	OUT	
31	S17	-	NC
32	S18	-	NC
33	VDD	-	UNSW 5
34	VEE	-	for FDP DRIVE
35	G9	OUT	COLUMN DISPLAY DATA OUTPUT (GRID CONTROL)
36	G8	OUT	
37	G7	OUT	
38	G6	OUT	
39	G5	OUT	
40	G4	OUT	
41	G3	OUT	
42	G3	OUT	
43	G2	OUT	
44	G1	OUT	

Table 6-2-1-A TIMER CPU pin function (1/2)

PIN NO.	LABEL	IN/OUT	NOTE
45	VDD	-	UNSW 5 V
46	NC	-	NC
47	INDEX	OUT	INDEX LED CONTROL (LED ON: H)
48	NC	-	
49	NC	-	
50	OPERATE	OUT	LED CONTROL (LED ON: H)
51	VSS	-	GND
52	OSC	-	NOT USED

Table 6-2-1-B TIMER CPU pin function (2/2)